4500 NORTH WEST AVE. • P.O. BOX 231 • EL DORADO, AR. 71731 • (870) 863-1400

EL DORADO
CHEMICAL COMPANY

July 20, 2016

Arkansas Department of Environmental Quality
Water Enforcement Branch
5301 Northshore Drive
North Little Rock, AR 72118-5317

RE: NPDES Permit AR0000752 Discharge Monitoring Report for period ending June 30, 2016.

Enclosed you will find the Discharge Monitoring Reports ending June 30, 2016.

If you have any questions regarding this report, please contact Edward L Pearson at (870) 863-1400.

Sincerely,

Edward L Pearson

Edward L Pearson

Environmental Technician

Enclosures

NON-COMPLIANCE REPORT

Facility Name: El Dorado Chemical Company

Permit Number: AR0000752 **AFIN:** 70-00040

Month / Year: Jun-16

Type of Violation	Permit Limit	Date of Violation	Cause of Violation	Corrective Action or Other Narrative
Outfall 006 / Lead Monthly Average (23 ug/L)	3.8 ug/L Monthly Average	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006 / Lead Daily Max. (23 ug/L)	7.62 ug/L Daily Max.	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/ Zinc Monthly Average (490 ug/L)	115.62 ug/L Monthly Average	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/ Zinc Daily Max.(490 ug/L)	231.99 ug/L Daily Max.	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/TDS Monthly Average(920mg/L)	291 mg/L Monthly Average	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 006/TDS Daily Max.(920mg/L)	436.5 mg/L Daily Max.	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 006 in an effort to promote vegetative cover.
Outfall 007/ Zinc Monthly Average (280 ug/L)	115.62 ug/L Monthly Average	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007/ Zinc Daily Max.(280 ug/L)	231.99 ug/L Daily Max.	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007/TDS Monthly Average(1900mg/L)	291 mg/L Monthly Average	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.
Outfall 007/TDS Daily Max.(1900mg/L)	436.5 mg/L Daily Max.	6/3/2016	Unknown	EDCC has applied pelletized lime in the area of outfall 007 in an effort to promote vegetative cover.

I CERTIFY THAT UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 U.S.C 1001 AND 33 U.S.C. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

Kelly Olivier

7-19-2016

Signature / Date

May 20, 2016

Test Results of
Second Quarter
Chronic 7-Day Renewal
Biomonitoring Testing
for
Outfall 010
El Dorado, AR

Control No. 201997-1

Prepared for:

Mr. Eddie Pearson
El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

Prepared by:

AMERICAN INTERPLEX CORPORATION
8600 Kanis Road
Little Rock, AR 72204-2322

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

Re: Chronic 7-Day Renewal utilizing *Pimephales promelas* (Fathead minnow) and *Ceriodaphnia dubia*
Outfall 010 - El Dorado, AR
NPDES Permit No. AR0000752

Dear Mr. Eddie Pearson:

This report is the analytical results and supporting information for the samples submitted to American Interplex Corporation (AIC). The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the Chief Operating Officer or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" EPA-821-R-02-013, Fourth Edition, October 2002. Test results are summarized below:

Method 1000.0 Chronic *Pimephales promelas* (Fathead minnow) Survival and Growth Test: The No Observable Effects Concentration (NOEC) for survival occurred at 2.1 % effluent, which is above the critical dilution of 1.6 %. Any statistical difference with sublethal effects cannot be considered toxic due to the minimum significant difference (PMSD) calculated result being below the lower PMSD bounds. **The sample, therefore PASSED both lethal and sub-lethal effects for the Fathead minnow test.**

Method 1002.0 Chronic *Ceriodaphnia dubia* Survival and Reproduction Test: The No Observable Effects Concentration (NOEC) for survival occurred at 2.1 % effluent, which is above the critical dilution of 1.6 %. The NOEC for reproduction occurred at 2.1 % effluent, which is above the critical dilution of 1.6 %. **The sample, therefore, PASSED both lethal and sub-lethal effects for the *Ceriodaphnia dubia* test.**

AMERICAN INTERPLEX CORPORATION

John Overbey
Chief Operating Officer

PDF cc: El Dorado Chemical Company
ATTN: Mr. David Sartain
dsartain@edc-ark.com

El Dorado Chemical Company
ATTN: Mr. Kelly Olivier
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lmorgan@edc-ark.com

Table of Contents

I. Control Acceptance Criteria

Pimephales promelas (Fathead minnow) Method 1000.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Growth > or = 0.25 mg per Surviving minnow	0.282	PASS
Control Growth CV < or = 40%	6.96	PASS
Growth Minimum Significant Difference 12 to 30%	8.29	BELOW
Critical Dilution CV < or = 40%	3.60	PASS

Ceriodaphnia dubia Method 1002.0

CRITERIA	RESULTS	PASS/FAIL
Control Survival > or = 80%	100	PASS
Control Reproduction > or = 15 per Surviving Female	21.2	PASS
Control CV < or = 40% per Surviving Female	34.1	PASS
Reproduction Minimum Significant Difference 13 to 47%	29.0	PASS
Critical Dilution CV < or = 40%	13.9	PASS

II. Outlined Report

A. Introduction

1. Permit Number: AR0000752
2. Test Requirements:
   Test Methods 1000.0 and 1002.0
3. Receiving Stream:

B. Source of Effluent/Dilution Water

1. Effluent Samples:
   a. Sampling Point: Outfall 010
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	7.7	7.6	7.3
pH (standard units)	7.2	7.2	7.4
Alkalinity (mg/l as CaCO3)	22	25	22
Hardness (mg/l as CaCO3)	36	37	33
Conductivity (umhos/cm)	480	480	480
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05
Ammonia as N (mg/l)	15	16	13

2. Dilution Water Samples: Synthetic Soft Water #4327
   a. Dates Prepared: May 2 through May 16, 2016
   b. Chemical Data:

Analysis	Sample 1	Sample 2	Sample 3
Dissolved oxygen (mg/l)	8.0	7.5	7.5
pH (standard units)	7.7	7.7	7.8
Alkalinity (mg/l as CaCO3)	33	32	31
Hardness (mg/l as CaCO3)	47	47	47
Conductivity (umhos/cm)	180	180	180
Residual Chlorine (mg/l)	<0.05	<0.05	<0.05

C. Test Methods
1. Test methods used:
Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA-821-R-02-013; test Methods 1000.0 and 1002.0, Fathead Minnow Survival and Growth and *Ceriodaphnia dubia* Survival and Reproduction.
2. Endpoint: No Observable Effects Concentration (NOEC)
3. Test Conditions:

Pimephales promelas (Fathead minnow) Survival and Growth Method 1000.0

Date & Time Test Initiated:	May 10, 2016 at 1050
Date & Time Test Terminated:	May 17, 2016 at 0950
Type & Volume of Test Chamber:	500 ml disposable beaker
Volume of Sample:	250 ml
Number of Organisms per replicate:	8
Number of Replicates per dilution:	5

Ceriodaphnia dubia Survival and Growth Method 1002.0

Date & Time Test Initiated:	May 10, 2016 at 1400
Date & Time Test Terminated:	May 17, 2016 at 1330
Type & Volume of Test Chamber:	30 ml disposable beaker
Volume of Sample:	15 ml
Number of Organisms per replicate:	1
Number of Replicates per dilution:	10

4. Acclimation of test organisms: Obtained from in-house cultures
5. Test Temperature: 25 +/- 1 degree Celsius

D. Test Organisms
1. Scientific Name
a. Test 1000.0 *Pimephales promelas*
b. Test 1002.0 *Ceriodaphnia dubia*

III. Data Analysis

The data was analyzed using American Interplex Corporation's Laboratory Information Management Software based on Toxstat.

Pimephales promelas (Fathead minnow) survival data was transformed using the Arc Sine transformation. Normality and homogeneity of variance were checked using Shapiro-Wilk's. The survival data was then analyzed using Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC).

Fathead minnow growth data was analyzed for normality and homogeneity of variance using Shapiro-Wilk's and Bartlett's test. Dunnett's Test was used to determine the No Observable Effects Concentration (NOEC) for growth.

Ceriodaphnia dubia survival data was analyzed with Fisher's Exact Test. Reproduction data was analyzed using Kolmogorov's Test for Normality and analyzed with Steel's Many-One Rank Test to determine the No Observable Effects Concentration (NOEC) for Reproduction. Dunnett's Test was used to calculate the PMSD.

IV. Standard Reference Toxicants

American Interplex Corporation has an ongoing test organism culturing program. The sensitivity of the offspring is determined by performing a standard reference toxicant test with each effluent test. Sodium chloride in synthetic moderately hard water is used as prescribed in EPA-821-R-02-013.

Pimephales promelas (Fathead minnow)

Chronic reference tests are performed monthly.
A chronic reference test was performed on April 12, 2016 at 1415 to April 19, 2016 at 1355
The results were as follows: (Control No. 201374-1.)
Survival LC-50: 4013 mg/l
Growth IC-25: 3341 mg/l
Growth PMSD: 20.1

Ceriodaphnia dubia

Chronic reference tests are performed monthly.
A chronic reference test was performed on April 12, 2016 at 1530 to April 20, 2016 at 1500
The results were as follows: (Control No. 201374-2.)
Survival LC-50: 1673 mg/l
Growth IC-25: 1101 mg/l
Growth PMSD: 17.9

V. Chemical Analysis/Quality Control

Parameter	Method	% Recovery	Relative % Difference
Alkalinity	SM 2320 B	NA	0.699
Hardness	EPA 200.7	99.8	3.43
pH	SM 4500-H+ B	101	0.00
Conductivity	EPA 120.1	106	1.29

VI. Organism History

Pimephales promelas (Fathead minnow)

Date: May 10, 2016
Age: <24 hours
Source: In-house culture
Water Chemistry Record:
Alkalinity: 57-64 mg/l
Hardness: 80-100 mg/l
Temperature: 25 deg.C

Ceriodaphnia dubia

Date: May 10, 2016
Age: <24 hours
Source: In-house culture
Water Chemistry Record:
Alkalinity: 57-64 mg/l
Hardness: 80-100 mg/l
Temperature: 25 deg.C

VII. Results Summary *Pimephales promelas*, Fathead minnow Larval Survival and Growth Test -- Method 1000.0

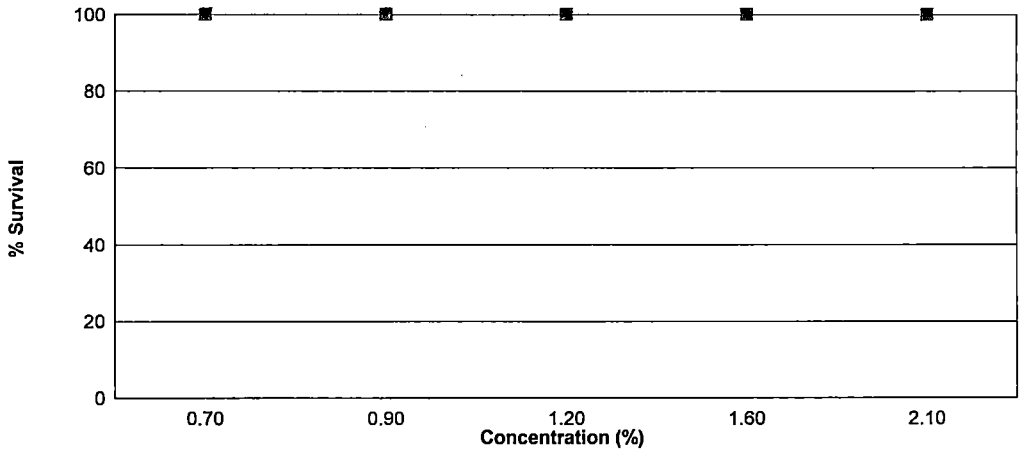
Larvae are exposed in a static renewal system for seven days to different concentrations of effluent with dilution water. Test results are based on the survival and growth (increase in weight) of the larvae.

Effluent dilutions for this test were 0.7 %, 0.9 %, 1.2 %, 1.6 %, 2.1 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 1.6 % effluent.

The test was initiated on May 10, 2016 at 1050 and continued through May 17, 2016 at 0950. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 2.1 % effluent
b.) NOEC growth = 2.1 % effluent



Summary of the 7-day Fathead Minnow Survival and Growth		
Concentration	Percent Survival	Mean Growth (mg)
Control	100	0.282
0.7 %	100	0.268
0.9 %	100	0.271
1.2 %	100	0.268
1.6 %	100	0.266
2.1 %	100	0.280

VII. Results Summary *Ceriodaphnia dubia*, Cladoceran Survival and Reproduction Test -- Method 1002.0

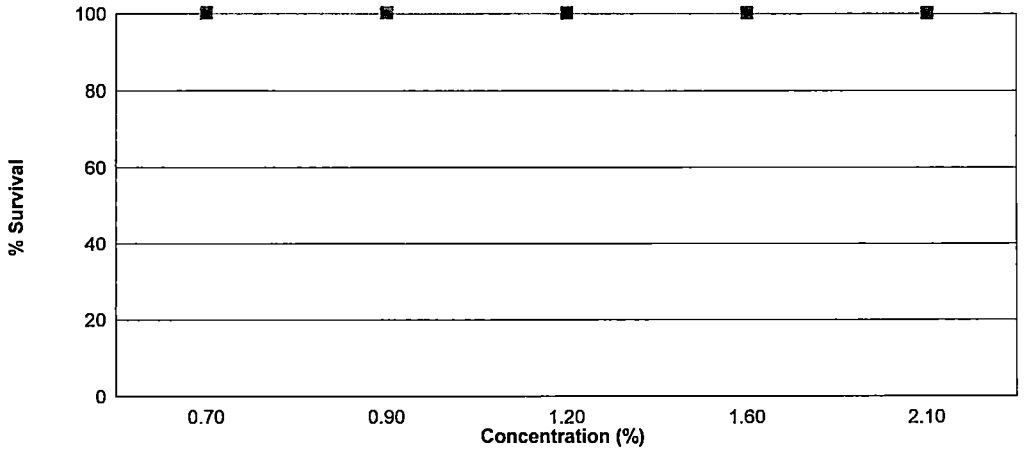
Neonates are exposed in a static renewal system to different concentrations of effluent with dilution water until 60% of surviving control organisms have three broods of offspring with an average of at least 15 young per female.

Effluent dilutions for this test were 0.7 %, 0.9 %, 1.2 %, 1.6 %, 2.1 % in accordance with the NPDES permit.

The low flow or 'critical' dilution is specified in the NPDES permit as 1.6 % effluent.

The test was initiated on May 10, 2016 at 1400 and continued through May 17, 2016 at 1330. Statistical analyses were performed on the observed data and the no observable effects concentrations (NOECs) were as follows:

a.) NOEC survival = 2.1 % effluent
b.) NOEC reproduction = 2.1 % effluent



Summary of the 6-day *Ceriodaphnia dubia* Survival and Reproduction Data		
Concentration	Percent Survival	Mean Reproduction
Control	100	21.2
0.7 %	100	26.4
0.9 %	100	24.8
1.2 %	100	27.0
1.6 %	100	26.8
2.1 %	100	26.6

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Survival

Date and Time Test Initiated: May 10, 2016 at 1050
Date and Time Test Terminated: May 17, 2016 at 0950

Concentration	Replicate	Number of Survivors						
		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Control	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
0.7 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
0.9 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
1.2 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
1.6 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8
2.1 %	A	8	8	8	8	8	8	8
	B	8	8	8	8	8	8	8
	C	8	8	8	8	8	8	8
	D	8	8	8	8	8	8	8
	E	8	8	8	8	8	8	8

Appendix A1: Test 1000.0

Pimephales promelas (Fathead Minnow) 7-Day Growth

Test Initiated: May 10, 2016 at 1050
Test Terminated: May 17, 2016 at 0950
Drying Started: May 16, 2016 at 0930
Drying Ended: May 19, 2016 at 0920

Concentration	Replicate	Weight of pan	Weight of pan + fish	Total weight of fish (g)	Original # of fish	Mean dry weight (mg)
Control	A	.94679	.94898	0.00219	8	0.274
	B	.94387	.94605	0.00218	8	0.272
	C	.94242	.94493	0.00251	8	0.314
	D	.93785	.94015	0.00230	8	0.288
	E	.94303	.94514	0.00211	8	0.264
0.7 %	A	.94674	.94901	0.00227	8	0.284
	B	.94265	.94480	0.00215	8	0.269
	C	.94285	.94489	0.00204	8	0.255
	D	.94004	.94221	0.00217	8	0.271
	E	.94203	.94410	0.00207	8	0.259
0.9 %	A	.94101	.94305	0.00204	8	0.255
	B	.93869	.94101	0.00232	8	0.290
	C	.94029	.94234	0.00205	8	0.256
	D	.93405	.93632	0.00227	8	0.284
	E	.94345	.94560	0.00215	8	0.269
1.2 %	A	.94452	.94653	0.00201	8	0.251
	B	.93983	.94189	0.00206	8	0.258
	C	.94214	.94448	0.00234	8	0.292
	D	.94108	.94331	0.00223	8	0.279
	E	.92126	.92334	0.00208	8	0.260
1.6 %	A	.92632	.92837	0.00205	8	0.256
	B	.92869	.93079	0.00210	8	0.262
	C	.92705	.92930	0.00225	8	0.281
	D	.92736	.92951	0.00215	8	0.269
	E	.92042	.92252	0.00210	8	0.262
2.1 %	A	.91980	.92184	0.00204	8	0.255
	B	.91640	.91858	0.00218	8	0.272
	C	.92205	.92432	0.00227	8	0.284
	D	.92355	.92583	0.00228	8	0.285
	E	.92474	.92717	0.00243	8	0.304

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: May 10, 2016 at 1400
Date and Time Test Terminated: May 17, 2016 at 1330

Concentration: Control													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	4	4	0	0	8	10	0.800
4	5	6	6	5	4	2	0	5	3	3	39	10	3.90
5	10	9	9	9	11	9	7	7	2	8	81	10	8.10
6	14	12	0	10	11	11	14	12E	0	12	84	10	8.40
7													
8													
TOTAL	29	27	15	24	26	22	25	16	5	23	212	10	21.2

E = Excluded fourth brood neonates

Concentration: 0.7 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	3	0	0	3	0	6	10	0.600
4	5	5	6	6	4	1	5	6	0	3	41	10	4.10
5	11	9	11	9	11	9	8	12	9	7	96	10	9.60
6	20	14	12	12	13	13	0	15	10	12	121	10	12.1
7													
8													
TOTAL	36	28	29	27	28	26	13	33	22	22	264	10	26.4

Concentration: 0.9 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	4	4	4	2	0	14	10	1.40
4	5	0	6	2	6	0	0	0	0	4	23	10	2.30
5	13	0	11	1	12	8	10	9	8	10	82	10	8.20
6	15	11	11	5	14	12	16	15	17	13	129	10	12.9
7													
8													
TOTAL	33	11	28	8	32	24	30	28	27	27	248	10	24.8

Appendix A1: Test 1002.0

Ceriodaphnia dubia Survival and Reproduction

Date and Time Test Initiated: May 10, 2016 at 1400
Date and Time Test Terminated: May 17, 2016 at 1330

Concentration: 1.2 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	3	0	0	3	0	6	10	0.600
4	4	5	6	5	3	0	3	3	0	3	32	10	3.20
5	11	10	11	12	12	9	8	7	8	7	95	10	9.50
6	17	13	12	11	13	16	16	11	13	15	137	10	13.7
7													
8													
TOTAL	32	28	29	28	28	28	27	21	24	25	270	10	27.0

Concentration: 1.6 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	1	3	0	2	1	7	10	0.700
4	4	5	7	4	4	0	0	5	0	2	31	10	3.10
5	10	11	11	12	8	8	10	13	9	10	102	10	10.2
6	14	17	10	10	10	12	14	13	13	15	128	10	12.8
7													
8													
TOTAL	28	33	28	26	22	21	27	31	24	28	268	10	26.8

Concentration: 2.1 %													
Day	Replicate										No. of Young	No. of Adults	Young per Adult
	1	2	3	4	5	6	7	8	9	10			
1	0	0	0	0	0	0	0	0	0	0	0	10	0.00
2	0	0	0	0	0	0	0	0	0	0	0	10	0.00
3	0	0	0	0	0	0	2	0	2	0	4	10	0.400
4	2	6	6	7	7	4	0	5	0	4	41	10	4.10
5	12	13	6	9	12	11	9	11	9	9	101	10	10.1
6	14	15	10	14	0	13	15	17	11	11	120	10	12.0
7													
8													
TOTAL	28	34	22	30	19	28	26	33	22	24	266	10	26.6

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Survival

		Transformation of Data		Transform: Arc Sin(Square Root(Y))
Group	Identification	Rep	Value	Transformed
1	Control	1	1.00000	1.39310
1	Control	2	1.00000	1.39310
1	Control	3	1.00000	1.39310
1	Control	4	1.00000	1.39310
1	Control	5	1.00000	1.39310
2	0.7 %	1	1.00000	1.39310
2	0.7 %	2	1.00000	1.39310
2	0.7 %	3	1.00000	1.39310
2	0.7 %	4	1.00000	1.39310
2	0.7 %	5	1.00000	1.39310
3	0.9 %	1	1.00000	1.39310
3	0.9 %	2	1.00000	1.39310
3	0.9 %	3	1.00000	1.39310
3	0.9 %	4	1.00000	1.39310
3	0.9 %	5	1.00000	1.39310
4	1.2 %	1	1.00000	1.39310
4	1.2 %	2	1.00000	1.39310
4	1.2 %	3	1.00000	1.39310
4	1.2 %	4	1.00000	1.39310
4	1.2 %	5	1.00000	1.39310
5	1.6 %	1	1.00000	1.39310
5	1.6 %	2	1.00000	1.39310
5	1.6 %	3	1.00000	1.39310
5	1.6 %	4	1.00000	1.39310
5	1.6 %	5	1.00000	1.39310
6	2.1 %	1	1.00000	1.39310
6	2.1 %	2	1.00000	1.39310
6	2.1 %	3	1.00000	1.39310
6	2.1 %	4	1.00000	1.39310
6	2.1 %	5	1.00000	1.39310

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Survival

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
D = 0		
W = 0		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	

Data FAIL normality test (alpha = 0.01).

Steel's Many-One Rank Test					Transform: Arc Sin(Square Root(Y))
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	0.7 %	27.50	16.00	5.00	
3	0.9 %	27.50	16.00	5.00	
4	1.2 %	27.50	16.00	5.00	
5	1.6 %	27.50	16.00	5.00	
6	2.1 %	27.50	16.00	5.00	

Critical values are 1 tailed (k=5)

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Growth

Shapiro - Wilk's Test for Normality		No Transformation
D = 0.005899		
W = 0.9619		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	
Data PASS normality test (alpha = 0.01).		

Bartlett's Test for Homogeneity of Variance		No Transformation
Calculated B1 statistic = 2.584		
Critical B = 15.086	(alpha = 0.01, df = 5)	
Data PASS B1 homogeneity test at 0.01 level.		

Appendix A2: Statistics

Pimephales promelas (Fathead minnow) Growth

ANOVA Table				No Transformation
SOURCE	DF	SS	MS	F
Between	5	0.001218	0.0002436	0.991
Within (Error)	24	0.005899	0.0002458	
Total	29	0.007117		

Critical F = 3.9 (alpha = 0.01, df = 5,24)
2.62 (alpha = 0.05, df = 5,24)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

Dunnett's Test - Table 1 of 2					No Transformation
Ho:Control<Treatment					
Group	Identification	Transformed Mean	Mean In Original Units	T Stat	Sig 0.05
1	Control	0.2824	0.2824		
2	0.7 %	0.2676	0.2676	1.493	
3	0.9 %	0.2708	0.2708	1.17	
4	1.2 %	0.268	0.268	1.452	
5	1.6 %	0.266	0.266	1.654	
6	2.1 %	0.28	0.28	0.242	

Dunnett's critical value = 2.36 (1 Tailed, alpha = 0.05, df = 5,24)

Dunnett's Test - Table 2 of 2					No Transformation
Ho:Control<Treatment					
Group	Identification	Num of Reps	Min Sig Diff (In Orig. Units)	% of Control	Difference From Control
1	Control	5			
2	0.7 %	5	0.0234	8.29	0.0148
3	0.9 %	5	0.0234	8.29	0.0116
4	1.2 %	5	0.0234	8.29	0.0144
5	1.6 %	5	0.0234	8.29	0.0164
6	2.1 %	5	0.0234	8.29	0.0024

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
0.7 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
0.9 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
1.2 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
1.6 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Appendix A2: Statistics

Ceriodaphnia dubia Survival

Fisher's Exact Test			
Identification	Alive	Dead	Total Animals
Control	10	0	10
2.1 %	10	0	10
Total	20	0	20

Critical Fisher's value (10,10,10) (alpha=0.05) is 6. b value is 10. Since b is greater than 6 there is NO SIGNIFICANT DIFFERENCE between CONTROL and TREATMENT at the 0.05 level.

Summary of Fisher's Exact Test				
Group	Identification	Exposed	Dead	Sig 0.05
0	Control	10	0	
1	0.7 %	10	0	
2	0.9 %	10	0	
3	1.2 %	10	0	
4	1.6 %	10	0	
5	2.1 %	10	0	

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Kolmogorov Test for Normality		No Transformation
D = 0.1443		
D* = 1.132		
Critical D* = 1.035	(alpha = 0.01, N = 60)	
Data FAIL normality test (alpha = 0.01).		

Steel's Many-One Rank Test					No Transformation
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	0.7 %	126.50	75.00	10.00	
3	0.9 %	127.50	75.00	10.00	
4	1.2 %	134.00	75.00	10.00	
5	1.6 %	130.00	75.00	10.00	
6	2.1 %	126.00	75.00	10.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

Ceriodaphnia dubia Reproduction

Dunnett's Test for PMSD Calculation (excluding deaths if applicable)

ANOVA Table — No Transformation

SOURCE	DF	SS	MS	F
Between	5	249.3	49.86	1.407
Within (Error)	54	1914	35.44	
Total	59	2163		

Critical F = 3.38 (alpha = 0.01, df = 5,54)
2.38 (alpha = 0.05, df = 5,54)

Since F < Critical F FAIL TO REJECT Ho: All equal (alpha = 0.05)

Dunnett's Test - Table 1 of 2 — No Transformation

Ho:Control<Treatment

Group	Identification	Transformed Mean	Mean In Original Units	T Stat	Sig 0.05
1	Control	21.2	21.2		
2	0.7 %	26.4	26.4	-1.953	
3	0.9 %	24.8	24.8	-1.352	
4	1.2 %	27	27	-2.179	
5	1.6 %	26.8	26.8	-2.103	
6	2.1 %	26.6	26.6	-2.028	

Dunnett's critical value = 2.31 (1 Tailed, alpha = 0.05, df [used] = 5,40) (Actual df = 5,54)

Dunnett's Test - Table 2 of 2 — No Transformation

Ho:Control<Treatment

Group	Identification	Num of Reps	Min Sig Diff (In Orig. Units)	% of Control	Difference From Control
1	Control	10			
2	0.7 %	10	6.15	29	-5.2
3	0.9 %	10	6.15	29	-3.6
4	1.2 %	10	6.15	29	-5.8
5	1.6 %	10	6.15	29	-5.6
6	2.1 %	10	6.15	29	-5.4

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: May 10, 2016 at 1532
Date and Time Test Terminated: May 17, 2016 at 1330

Effluent Conc.: Control		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.0	5.1	7.5	7.6	7.5	7.3	7.8
	Final *1	7.3	7.2	7.2	7.4	7.5	7.3	7.1
	Final *2	7.7	7.5	7.5	7.8	7.6	7.6	
pH, units	Initial	7.7	7.7	7.7	7.6	7.8	7.6	7.7
	Final *1	7.6	7.4	7.5	7.5	7.7	7.4	7.5
	Final *2	8.0	8.0	8.1	8.2	8.0	7.9	
Alkalinity, mg CaCO3/l		33	NA	32	NA	31	NA	NA
Hardness, mg CaCO3/l		47	NA	47	NA	47	NA	NA
Conductivity, umhos/cm		180	110	180	170	180	180	180
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

Effluent Conc.: 0.7 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.9	7.8	7.3	7.3	7.7	7.5	8.0
	Final *1	7.7	6.6	7.2	7.3	7.6	7.0	7.1
	Final *2	7.8	7.6	7.8	7.5	7.8	7.9	
pH, units	Initial	7.7	7.5	7.8	7.5	7.8	7.6	7.6
	Final *1	7.6	7.3	7.5	7.5	7.8	7.4	7.5
	Final *2	8.0	8.0	8.2	8.2	8.1	8.0	

Effluent Conc.: 0.9 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	7.8	7.7	7.5	7.3	7.5	8.0
	Final *1	7.7	6.5	6.9	7.1	7.5	6.9	7.3
	Final *2	7.8	7.8	8.0	8.0	7.7	8.1	
pH, units	Initial	7.7	7.6	7.7	7.5	7.8	7.6	7.6
	Final *1	7.6	7.2	7.5	7.4	7.8	7.4	7.5
	Final *2	8.0	8.1	8.1	8.2	8.1	8.0	

Appendix A3: Water Chemistry

Routine Chemical and Physical Data

Date and Time Test Initiated: May 10, 2016 at 1532
Date and Time Test Terminated: May 17, 2016 at 1330

Effluent Conc.: 1.2 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	8.0	7.8	7.5	7.7	7.9	7.6	7.8
	Final *1	7.4	6.4	7.2	7.0	7.6	7.1	7.2
	Final *2	7.6	7.5	7.8	7.5	7.8	7.9	
pH, units	Initial	7.7	7.6	7.7	7.5	7.8	7.6	7.6
	Final *1	7.7	7.2	7.5	7.4	7.8	7.4	7.5
	Final *2	8.0	8.1	8.2	8.3	8.1	8.0	

Effluent Conc.: 1.6 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	7.8	7.4	7.4	7.5	7.4	7.6
	Final *1	7.6	6.4	7.4	6.9	7.6	7.1	7.1
	Final *2	7.7	7.7	7.7	7.9	8.0	7.9	
pH, units	Initial	7.7	7.6	7.7	7.5	7.8	7.7	7.6
	Final *1	7.6	7.4	7.6	7.5	7.8	7.4	7.4
	Final *2	8.0	8.0	8.1	8.3	8.2	8.0	
Alkalinity, mg CaCO3/l		34	NA	34	NA	33	NA	NA
Hardness, mg CaCO3/l		50	NA	52	NA	46	NA	NA
Conductivity, umhos/cm		180	180	180	180	180	190	180
Res. Chlorine, mg/l		<0.05	NA	<0.05	NA	<0.05	NA	NA

Effluent Conc.: 2.1 %		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
DO, mg/l	Initial	7.8	7.8	7.3	7.4	7.6	7.5	7.8
	Final *1	7.8	6.5	7.0	6.9	7.6	6.9	7.1
	Final *2	7.7	7.9	7.9	7.7	8.1	8.2	
pH, units	Initial	7.7	7.5	7.7	7.5	7.8	7.6	7.6
	Final *1	7.7	7.3	7.5	7.5	7.8	7.4	7.4
	Final *2	8.0	8.1	8.2	8.3	8.2	8.0	

*1 = data from the *Pimephales promelas* (Fathead Minnow) test *2 = data from the *Ceriodaphnia dubia* test

Appendix A4: Test 1000.0

Chronic Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

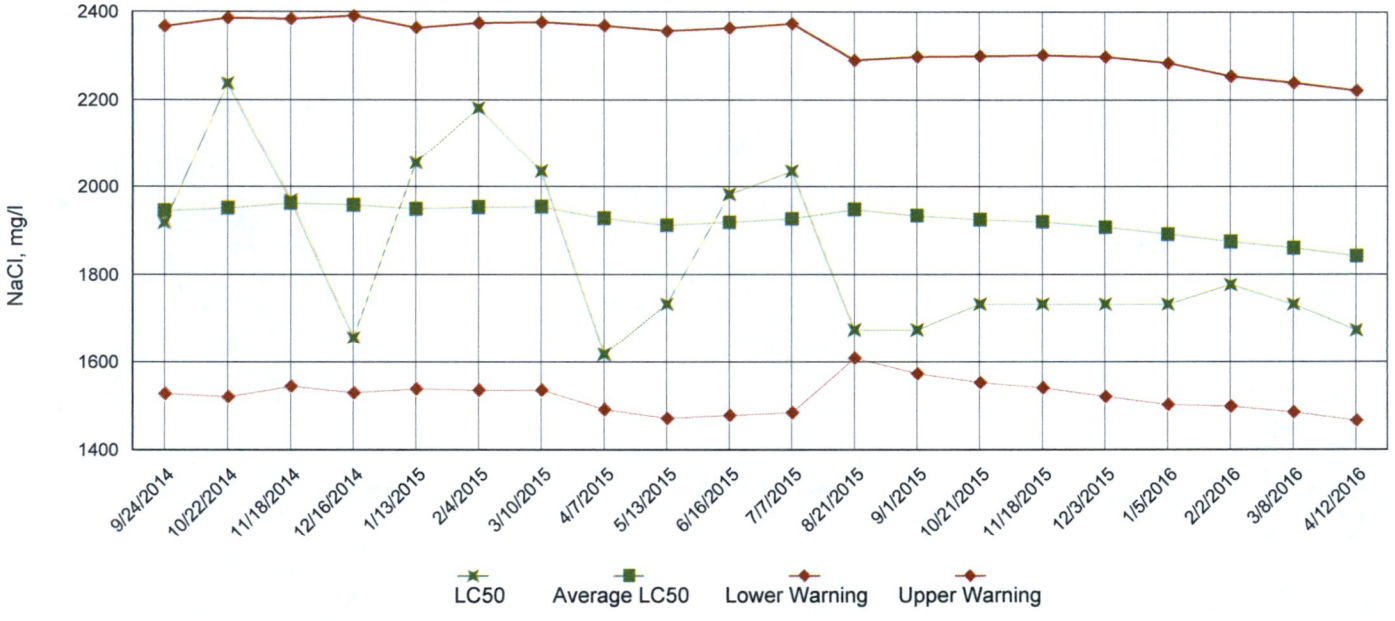
LC50 Survival Data

IC25 Growth Data

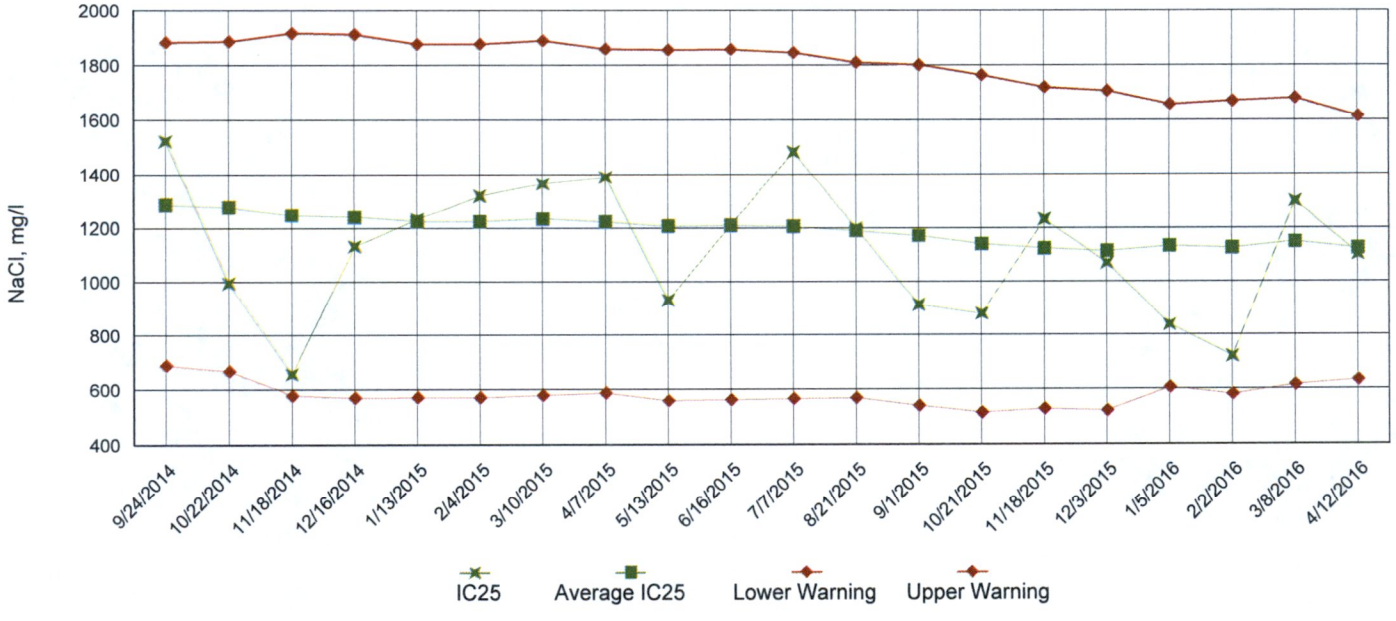
Appendix A4: Test 1002.0

Chronic Reference Toxicant, *Ceriodaphnia dubia*

LC50 Survival Data



IC25 Reproduction Data



Appendix B: Test 1000.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Pimephales promelas (Fathead Minnow)
SURVIVAL AND GROWTH

Permittee: El Dorado Chemical Company

NPDES No.: AR0000752

Date and Time Test Initiated: May 10, 2016 at 1050
Date and Time Test Terminated: May 17, 2016 at 0950
Dilution water used: Synthetic Soft Water #4327

DATA TABLE FOR SURVIVAL

Effluent Conc. %	Percent Survival in replicate chambers A	B	C	D	E	Mean percent survival 24 hr	48 hr	7 days	CV%
Control	100	100	100	100	100	100	100	100	0.00
0.7 %	100	100	100	100	100	100	100	100	0.00
0.9 %	100	100	100	100	100	100	100	100	0.00
1.2 %	100	100	100	100	100	100	100	100	0.00
1.6 %	100	100	100	100	100	100	100	100	0.00
2.1 %	100	100	100	100	100	100	100	100	0.00

DATA TABLE FOR GROWTH

Effluent Conc. %	Average dry weight, mg replicate chambers A	B	C	D	E	Mean dry weight, mg	CV%
Control	0.274	0.272	0.314	0.288	0.264	0.282	6.96
0.7 %	0.284	0.269	0.255	0.271	0.259	0.268	4.24
0.9 %	0.255	0.290	0.256	0.284	0.269	0.271	5.88
1.2 %	0.251	0.258	0.292	0.279	0.260	0.268	6.33
1.6 %	0.256	0.262	0.281	0.269	0.262	0.266	3.60
2.1 %	0.255	0.272	0.284	0.285	0.304	0.28	6.45

CV = Coefficient of variation = standard deviation * 100 / mean

Appendix B: Test 1000.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Pimephales promelas (Fathead Minnow)
SURVIVAL AND GROWTH

1. Steel's Many-One Rank Test:

   Is the mean survival significantly different (p=0.05) than the control survival for the % effluent corresponding to (lethality):

a.) LOW FLOW OR CRITICAL DILUTION	(1.6 %)	____YES	X NO
b.) 1/2 LOW FLOW DILUTION	(NA)	____YES	____NO

2. Dunnett's Test:

   Is the mean dry weight (growth) significantly different (p=0.05) than the control's dry weight (growth) for the % effluent corresponding to (significant non-lethal effects):

a.) LOW FLOW OR CRITICAL DILUTION	(1.6 %)	____YES	X NO
b.) 1/2 LOW FLOW DILUTION	(NA)	____YES	____NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: 0 (TLP6C)

4. If you answered NO to 2.a) enter [0] otherwise enter [1]: 0 (TGP6C)

5. NOEC Pimephales Lethality: 2.1 % (TOP6C)

6. LOEC Pimephales Lethality: 2.1 % (TXP6C)

7. NOEC Pimephales Sublethality: 2.1 % (TPP6C)

8. LOEC Pimephales Sublethality: 2.1 % (TYP6C)

9. Coefficient of variation for Pimephales growth: 6.96 (TQP6C)

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Appendix B: Test 1000.0

CHRONIC TOXICITY SUMMARY FORM
Pimephales promelas (Fathead minnow)
CHEMICAL PARAMETERS CHART

PERMITTEE: El Dorado Chemical Company
NPDES NO.: AR0000752
CONTACT: Mr. Eddie Pearson
ANALYST: 280, 304, 310, 314

Test Initiated: DATE: May 10, 2016 TIME: 1050
Test Terminated: DATE: May 17, 2016 TIME: 0950

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	8.0	5.1	7.5	7.6	7.5	7.3	7.8
Final	7.3	7.2	7.2	7.4	7.5	7.3	7.1
pH Initial	7.7	7.7	7.7	7.6	7.8	7.6	7.7
Final	7.6	7.4	7.5	7.5	7.7	7.4	7.5
Alkalinity	33	NA	32	NA	31	NA	NA
Hardness	47	NA	47	NA	47	NA	NA
Conductivity	180	110	180	170	180	180	180
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 0.7 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	7.8	7.3	7.3	7.7	7.5	8.0
Final	7.7	6.6	7.2	7.3	7.6	7.0	7.1
pH Initial	7.7	7.5	7.8	7.5	7.8	7.6	7.6
Final	7.6	7.3	7.5	7.5	7.8	7.4	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	180	180	170	180	190	180
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 0.9 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.8	7.7	7.5	7.3	7.5	8.0
Final	7.7	6.5	6.9	7.1	7.5	6.9	7.3
pH Initial	7.7	7.6	7.7	7.5	7.8	7.6	7.6
Final	7.6	7.2	7.5	7.4	7.8	7.4	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	180	180	180	180	180	180
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.2 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.0	7.8	7.5	7.7	7.9	7.6	7.8
Final	7.4	6.4	7.2	7.0	7.6	7.1	7.2
pH Initial	7.7	7.6	7.7	7.5	7.8	7.6	7.6
Final	7.7	7.2	7.5	7.4	7.8	7.4	7.5
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	180	180	180	180	180	180
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.6 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.8	7.4	7.4	7.5	7.4	7.6
Final	7.6	6.4	7.4	6.9	7.6	7.1	7.1
pH Initial	7.7	7.6	7.7	7.5	7.8	7.7	7.6
Final	7.6	7.4	7.6	7.5	7.8	7.4	7.4
Alkalinity	34	NA	34	NA	33	NA	NA
Hardness	50	NA	52	NA	46	NA	NA
Conductivity	180	180	180	180	180	190	180
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 2.1 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.8	7.3	7.4	7.6	7.5	7.8
Final	7.8	6.5	7.0	6.9	7.6	6.9	7.1
pH Initial	7.7	7.5	7.7	7.5	7.8	7.6	7.6
Final	7.7	7.3	7.5	7.5	7.8	7.4	7.4
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	180	180	180	180	190	190
Chlorine	NA	NA	NA	NA	NA	NA	NA

Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

Permittee: El Dorado Chemical Company

NPDES No.: AR0000752

Date and Time Test Initiated: May 10, 2016 at 1400
Date and Time Test Terminated: May 17, 2016 at 1330
Dilution water used: Synthetic Soft Water #4327

PERCENT SURVIVAL

		Percent Effluent				
Time of Reading	Control	0.7 %	0.9 %	1.2 %	1.6 %	2.1 %
24 hour	100	100	100	100	100	100
48 hour	100	100	100	100	100	100
6 day	100	100	100	100	100	100

NUMBER OF YOUNG PRODUCED PER FEMALE @ 6 DAYS

		Percent Effluent				
Replicates	Control	0.7 %	0.9 %	1.2 %	1.6 %	2.1 %
A	29	36	33	32	28	28
B	27	28	11	28	33	34
C	15	29	28	29	28	22
D	24	27	8	28	26	30
E	26	28	32	28	22	19
F	22	26	24	28	21	28
G	25	13	30	27	27	26
H	16	33	28	21	31	33
I	5	22	27	24	24	22
J	23	22	27	25	28	24
Mean per Adult	21.2	26.4	24.8	27.0	26.8	26.6
Mean per Surviving Adult	21.2	26.4	24.8	27.0	26.8	26.6
CV %	34.1	24.2	34.3	11.2	13.9	18.5

CV = Coefficient of variation = standard deviation * 100 / mean
(calculated based on young produced by surviving females)

Appendix B: Test 1002.0

SUMMARY REPORTING FORMS
CHRONIC BIOMONITORING
Ceriodaphnia dubia
SURVIVAL AND REPRODUCTION

1. Fisher's Exact Test:

   Is the mean survival significantly different (p=0.05) than the control survival for the % effluent corresponding to (lethality):

   a.) LOW FLOW OR CRITICAL DILUTION (1.6 %) _____YES ___X___ NO
   b.) 1/2 LOW FLOW DILUTION (NA) _____YES _____ NO

2. Steel's Many-One Rank Test:

   Is the mean number of young produced per female significantly different (p=0.05) than the control's number of young per female for the % effluent corresponding to (significant non-lethal effects):

   a.) LOW FLOW OR CRITICAL DILUTION (1.6 %) _____YES ___X___ NO
   b.) 1/2 LOW FLOW DILUTION (NA) _____YES _____ NO

3. If you answered NO to 1.a) enter [0] otherwise enter [1]: ___0___ (TLP3B)

4. If you answered NO to 2.a) enter [0] otherwise enter [1]: ___0___ (TGP3B)

5. NOEC Ceriodaphnia Lethality: ___2.1 %___ (TOP3B)

6. LOEC Ceriodaphnia Lethality: ___2.1 %___ (TXP3B)

7. NOEC Ceriodaphnia Sublethality: ___2.1 %___ (TPP3B)

8. LOEC Ceriodaphnia Sublethality: ___2.1 %___ (TYP3B)

9. Coefficient of variation for Ceriodaphnia Reproduction: ___34.1___ (TQP3B)

Appendix B: Test 1002.0

CHRONIC TOXICITY SUMMARY FORM
Ceriodaphnia dubia
CHEMICAL PARAMETERS CHART

PERMITTEE: El Dorado Chemical Company
NPDES NO.: AR0000752
CONTACT: Mr. Eddie Pearson
ANALYST: 280, 304, 310, 314

Test Initiated: DATE: May 10, 2016 TIME: 1400
Test Terminated: DATE: May 17, 2016 TIME: 1330

DILUTION Control	DAY 1	2	3	4	5	6	7
D.O. Initial	8.0	5.1	7.5	7.6	7.5	7.3	7.8
Final	7.7	7.5	7.5	7.8	7.6	7.6	--
pH Initial	7.7	7.7	7.7	7.6	7.8	7.6	7.7
Final	8.0	8.0	8.1	8.2	8.0	7.9	--
Alkalinity	33	NA	32	NA	31	NA	NA
Hardness	47	NA	47	NA	47	NA	NA
Conductivity	180	110	180	170	180	180	180
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 0.7 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.9	7.8	7.3	7.3	7.7	7.5	8.0
Final	7.8	7.6	7.8	7.5	7.8	7.9	--
pH Initial	7.7	7.5	7.8	7.5	7.8	7.6	7.6
Final	8.0	8.0	8.2	8.2	8.1	8.0	--
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	180	180	170	180	190	180
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 0.9 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.8	7.7	7.5	7.3	7.5	8.0
Final	7.8	7.8	8.0	8.0	7.7	8.1	--
pH Initial	7.7	7.6	7.7	7.5	7.8	7.6	7.6
Final	8.0	8.1	8.1	8.2	8.1	8.0	--
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	180	180	180	180	180	180
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.2 %	DAY 1	2	3	4	5	6	7
D.O. Initial	8.0	7.8	7.5	7.7	7.9	7.6	7.8
Final	7.6	7.5	7.8	7.5	7.8	7.9	--
pH Initial	7.7	7.6	7.7	7.5	7.8	7.6	7.6
Final	8.0	8.1	8.2	8.3	8.1	8.0	--
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	180	180	180	180	180	180
Chlorine	NA	NA	NA	NA	NA	NA	NA

DILUTION 1.6 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.8	7.4	7.4	7.5	7.4	7.6
Final	7.7	7.7	7.7	7.9	8.0	7.9	--
pH Initial	7.7	7.6	7.7	7.5	7.8	7.7	7.6
Final	8.0	8.0	8.1	8.3	8.2	8.0	--
Alkalinity	34	NA	34	NA	33	NA	NA
Hardness	50	NA	52	NA	46	NA	NA
Conductivity	180	180	180	180	180	190	180
Chlorine	<0.05	NA	<0.05	NA	<0.05	NA	NA

DILUTION 2.1 %	DAY 1	2	3	4	5	6	7
D.O. Initial	7.8	7.8	7.3	7.4	7.6	7.5	7.8
Final	7.7	7.9	7.9	7.7	8.1	8.2	--
pH Initial	7.7	7.5	7.7	7.5	7.8	7.6	7.6
Final	8.0	8.1	8.2	8.3	8.2	8.0	--
Alkalinity	NA	NA	NA	NA	NA	NA	NA
Hardness	NA	NA	NA	NA	NA	NA	NA
Conductivity	180	180	180	180	180	190	190
Chlorine	NA	NA	NA	NA	NA	NA	NA

AMERICAN INTERPLEX CORPORATION LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Quarterly - Permit AR0000752
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

AIC CONTROL NO: 201997
AIC PROPOSAL NO:
Carrier: Rush
Received Temperature C: 0.1 CS

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	MATRIX WATER	MATRIX SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Chronic - CD, FH	Remarks
1	010	05-09-16 1000		X	X		1	X	
									Field pH calibration
		Container Type						P	on _____ @ _____
		Preservative						NO	Buffer:

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	05-09-16 1200		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
			5/9/16 1430

Comments:

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Quarterly - Permit AR0000752
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

MATRIX

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	WATER	SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Chronic - CD, FH
2	010	05-11-16 1000		X	X		1	X
		Container Type						P
		Preservative						NO

AIC CONTROL NO: 201997
AIC PROPOSAL NO:
Carrier: Rush
Received Temperature C: 0.1 (CS)
Remarks
Field pH calibration
on _____ @ _____
Buffer:

G = Glass, NO = none
P = Plastic, S = Sulfuric acid pH2
V = VOA vials, N = Nitric acid pH2
H = HCl to pH2, B = NaOH to pH12
T = Sodium Thiosulfate, Z = Zinc acetate
A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
NORMAL or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	05-11-16 1120		
Relinquished By:	Date/Time	Received in Lab By: D. Brown	Date/Time 5-11-16 1445

Comments:

FORM 0060

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: El Dorado Chemical Company
Project Reference: Quarterly - Permit AR0000752
Project Manager: Mr. Eddie Pearson
Sampled By: Edward L Pearson

PO No.

AIC CONTROL NO: 201997
AIC PROPOSAL NO:
Carrier: Rush
Received Temperature C: 0.1

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	MATRIX WATER	MATRIX SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Chronic - CD, FH	Remarks
3	010	05-13-16 1030		X	X		1	X	
		Container Type					P		Field pH calibration
		Preservative					NO		on _____ @ _____
									Buffer:

G = Glass, P = Plastic, V = VOA vials, H = HCl to pH2, T = Sodium Thiosulfate
NO = none, S = Sulfuric acid pH2, N = Nitric acid pH2, B = NaOH to pH12, Z = Zinc acetate, A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone 870-312-1397 Fax:
Report Attention to: Mr. Eddie Pearson
Report Address to: 4500 North West Avenue
El Dorado, AR 71730
epearson@edc-ark.com

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	05-13-16 1200		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
		Cuyo Hoyt	5-13-16 1420

Comments:

FORM 0060

May 20, 2016

Test Results of
Second Quarter
Acute 48 hour Renewal
Biomonitoring Testing
for
Outfall 010
El Dorado, AR

Control No. 202075-1

Prepared for:

Mr. Eddie Pearson
El Dorado Chemical Company
4500 North West Avenue
El Dorado, AR 71730

Prepared by:

AMERICAN INTERPLEX CORPORATION
8600 Kanis Road
Little Rock, AR 72204-2322

El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
4500 North West Avenue
El Dorado, AR 71730

Re: Acute 48 hour Renewal Biomonitoring utilizing *Pimephales promelas* (Fathead Minnow) and *Daphnia pulex*
Outfall 010 - El Dorado, AR
Client NPDES Permit No. AR0000752

Dear Mr. Eddie Pearson:

This report is the analytical results and supporting information for the samples submitted to American Interplex Corporation (AIC). The following results are applicable only to the sample identified by the control number referenced above. Accurate assessment of the data requires access to the entire document. Each section of the report has been reviewed and approved by the appropriate Chief Operating Officer or qualified designee.

Testing procedures and Quality Assurance were in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" EPA-821-R-02-012, Fifth Edition, October 2002. Test results are summarized below:

Acute *Pimephales promelas* (Fathead Minnow) Survival Test: The No Observable Effects Concentration (NOEC) for survival was 23% effluent, and the LC-50 value was >23% effluent; the sample, therefore, **PASSED** at low flow of 17% effluent for lethal effects.

Acute *Daphnia pulex* Survival Test: The No Observable Effects Concentration (NOEC) for survival was 23% effluent, and the LC-50 value was >23% effluent; the sample, therefore, **PASSED** at low flow of 17% effluent for lethal effects.

AMERICAN INTERPLEX CORPORATION

John Overbey
Chief Operating Officer

PDF cc: El Dorado Chemical Company
ATTN: Mr. Eddie Pearson
epearson@edc-ark.com

El Dorado Chemical Company
ATTN: Ms. Vee Ann Poole
vapoole@edc-ark.com

Table of Contents

I. Introduction and Summary

Biomonitoring testing of 48-hour renewal definitive toxicity tests using *Daphnia pulex* and *Pimephales promelas* were performed.

The *Daphnia pulex* test was conducted from May 11, 2016 at 1630 to May 13, 2016 at 1430.

The *Pimephales promelas* test was conducted from May 11, 2016 at 1650 to May 13, 2016 at 1500.

The tests were performed in accordance with EPA-821-R-02-012. Statistical analyses were performed on the observed data.

The tests were conducted in temperature and light cycle controlled environmental chamber. The test temperature was 25 degrees C +/- 1 degree for the *Daphnia pulex* and 25 degrees C +/- 1 degree for the *Pimephales promelas*.

II. Control Acceptance Criteria

ORGANISM	CRITERIA	RESULTS	PASS/FAIL
Daphnia pulex	Control Survival >= 90%	100	PASS
Pimephales promelas	Control Survival >= 90%	100	PASS

III. Outlined Report

A. Introduction

1. Permit Number: AR0000752
2. Test Requirements: 48-hour renewal definitive toxicity test using:
   Daphnia pulex
   Pimephales promelas

B. Source of Effluent/Dilution Water

1. Effluent Samples:
   a. Sampling Point: Outfall 010
      May 12
   b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	8.2	7.2
pH (standard units)	7.3	7.3
Alkalinity (mg/l as CaCO3)	23	24
Hardness (mg/l as CaCO3)	33	32
Conductivity (umhos/cm)	470	480
Residual Chlorine (mg/l)	<0.05	<0.05

2. Dilution Water Samples: Synthetic Soft Water #4327
   a. Dates Collected/Prepared: May 2 through May 16, 2016
   b. Chemical Data:

Analysis	Sample 1	Sample 2
Dissolved oxygen (mg/l)	7.8	7.5
pH (standard units)	7.8	8.0
Alkalinity (mg/l as CaCO3)	32	32
Hardness (mg/l as CaCO3)	47	47
Conductivity (umhos/cm)	170	170
Residual Chlorine (mg/l)	<0.05	<0.05

C. Test Methods
1. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms, (Fifth Ed.), EPA-821-R-02-012, 48-hour acute definitive test.
   a. Endpoints:
      Death; the criteria employed to establish death are:
      i. No movement
      ii. No reaction to gentle prodding

Criteria	*Pimephales promelas*	*Daphnia pulex*
Type and Volume of Test Chamber	500 ml disposable beaker	30 ml disposable beaker
Volume of Sample	250 ml	25 ml
Organisms per chamber	8	8
Replicates per dilution	5	5
Test Temperature	25 deg. C	25 deg. C
Test Initiated	May 11, 2016 at 1650	May 11, 2016 at 1630
Test Terminated	May 13, 2016 at 1500	May 13, 2016 at 1430
Feeding	None required	None required
Age of Test Organisms	8 days	<24 hours

2. Chemical Methods Employed:

Analysis	Method
Dissolved oxygen (mg/l)	SM 4500-O C
pH (standard units)	SM 4500-H+ B
Alkalinity (mg/l as CaCO3)	SM 2320 B
Hardness (mg/l as CaCO3)	EPA 200.7
Conductivity (umhos/cm)	EPA 120.1
Residual Chlorine (mg/l)	SM 4500-CL- F
Temperature (deg.C)	EPA 170.1

D. Test Organisms
1. Scientific Name
Daphnia pulex
Pimephales promelas

2. Acclimation of test organisms:
Daphnia pulex
Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.
Pimephales promelas
Organisms were obtained from in-house cultures. The organisms were raised in moderately hard reconstituted water.

E. Quality Assurance
1. Toxicity Tests
a. Reference Toxicant: Sodium Chloride
b. Date of test:
Daphnia pulex: April 12, 2016 at 1720 to April 14, 2016 at 1520
Pimephales promelas: April 12, 2016 at 1430 to April 14, 2016 at 1430
c. Synthetic moderately hard dilution water used

Organism	LC50	Warning Limits
Daphnia pulex	2.15 g/l	1.26-2.58 g/l
Pimephales promelas	7.48 g/l	5.73-8.90 g/l

2. Chemical and Physical Analyses

Analysis	% Recovery	Relative % Difference
Alkalinity	NA	0.699
Hardness	99.8	3.43
pH	101	0.00
Conductivity	106	1.29

F. Organism History
Daphnia pulex
Date: May 11, 2016 at 1630
Age: <24 hours
Source: In-house culture
Water Chemistry Record:
Alkalinity: 57-64 mg/l
Hardness: 80-100 mg/l
Temperature: 25 deg.C
Pimephales promelas (Fathead minnow)
Date: May 11, 2016 at 1650
Age: 8 days
Source: In-house culture
Water Chemistry Record:
Alkalinity: 57-64 mg/l
Hardness: 80-100 mg/l
Temperature: 25 deg.C

IV. Results Summary

Daphnia pulex and *Pimephales promelas* are exposed in a static renewal system to different concentrations of effluent and dilution water. Effluent dilutions for this test were 7%, 10%, 13%, 17%, 23%. The low-flow concentration was 17%. Test results were based on survival.

Daphnia pulex

The *Daphnia pulex* test was conducted from May 11, 2016 at 1630 to May 13, 2016 at 1430.

Statistical analyses:

NOEC = 23%
LC50 = >23%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
7%	100	100
10%	100	100
13%	100	100
17%	100	100
23%	100	100

Pimephales promelas

The *Pimephales promelas* test was conducted from May 11, 2016 at 1650 to May 13, 2016 at 1500.

Statistical analyses:

NOEC = 23%
LC50 = >23%

Concentration	24 hour % Survival	48 hour % Survival
Control	100	100
7%	100	100
10%	100	100
13%	100	100
17%	100	97.5
23%	100	95.0

Appendix: A1

Daphnia pulex
Survival Data

Number of organisms per chamber: 8
Volume of test chamber: 30 ml

Age of organisms: <24 hours
Volume of test solution: 25 ml

Effluent Concentration		Number of Survivors 24 Hours	Number of Survivors 48 Hours	% Survival	CV %
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
7%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
10%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
13%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
17%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
23%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix: A1

Pimephales promelas
Survival Data

Number of organisms per chamber: 8 | Age of organisms: 8 days
Volume of test chamber: 500 ml | Volume of test solution: 250 ml

Effluent Concentration		Number of Survivors 24 Hours	Number of Survivors 48 Hours	% Survival	CV %
Control	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
7%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
10%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
13%	rep. A	8	8	100	0.00
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		
17%	rep. A	8	8	97.5	5.73
	rep. B	8	8		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	7		
23%	rep. A	8	7	95.0	7.21
	rep. B	8	7		
	rep. C	8	8		
	rep. D	8	8		
	rep. E	8	8		

CV = Coefficient of variance = standard deviation X 100/mean

Appendix A2: Statistics

Daphnia pulex

		Transformation of Data		Transform: Arc Sin(Square Root(Y))
Group	Identification	Rep	Value	Transformed
1	Control	1	1.00000	1.39310
1	Control	2	1.00000	1.39310
1	Control	3	1.00000	1.39310
1	Control	4	1.00000	1.39310
1	Control	5	1.00000	1.39310
2	7%	1	1.00000	1.39310
2	7%	2	1.00000	1.39310
2	7%	3	1.00000	1.39310
2	7%	4	1.00000	1.39310
2	7%	5	1.00000	1.39310
3	10%	1	1.00000	1.39310
3	10%	2	1.00000	1.39310
3	10%	3	1.00000	1.39310
3	10%	4	1.00000	1.39310
3	10%	5	1.00000	1.39310
4	13%	1	1.00000	1.39310
4	13%	2	1.00000	1.39310
4	13%	3	1.00000	1.39310
4	13%	4	1.00000	1.39310
4	13%	5	1.00000	1.39310
5	17%	1	1.00000	1.39310
5	17%	2	1.00000	1.39310
5	17%	3	1.00000	1.39310
5	17%	4	1.00000	1.39310
5	17%	5	1.00000	1.39310
6	23%	1	1.00000	1.39310
6	23%	2	1.00000	1.39310
6	23%	3	1.00000	1.39310
6	23%	4	1.00000	1.39310
6	23%	5	1.00000	1.39310

Appendix A2: Statistics

Daphnia pulex

Shapiro - Wilk's Test for Normality	Transform: Arc Sin(Square Root(Y))
D = 0	
W = 0	
Critical W = 0.9	(alpha = 0.01, N = 30)
Critical W = 0.927	(alpha = 0.05, N = 30)
Data FAIL normality test (alpha = 0.01).	

Steel's Many-One Rank Test			Transform: Arc Sin(Square Root(Y))		
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	7%	27.50	16.00	5.00	
3	10%	27.50	16.00	5.00	
4	13%	27.50	16.00	5.00	
5	17%	27.50	16.00	5.00	
6	23%	27.50	16.00	5.00	
Critical values are 1 tailed (k=5)					

Appendix A2: Statistics

Pimephales promelas

		Transformation of Data		Transform: Arc Sin(Square Root(Y))
Group	Identification	Rep	Value	Transformed
1	Control	1	1.00000	1.39310
1	Control	2	1.00000	1.39310
1	Control	3	1.00000	1.39310
1	Control	4	1.00000	1.39310
1	Control	5	1.00000	1.39310
2	7%	1	1.00000	1.39310
2	7%	2	1.00000	1.39310
2	7%	3	1.00000	1.39310
2	7%	4	1.00000	1.39310
2	7%	5	1.00000	1.39310
3	10%	1	1.00000	1.39310
3	10%	2	1.00000	1.39310
3	10%	3	1.00000	1.39310
3	10%	4	1.00000	1.39310
3	10%	5	1.00000	1.39310
4	13%	1	1.00000	1.39310
4	13%	2	1.00000	1.39310
4	13%	3	1.00000	1.39310
4	13%	4	1.00000	1.39310
4	13%	5	1.00000	1.39310
5	17%	1	1.00000	1.39310
5	17%	2	1.00000	1.39310
5	17%	3	1.00000	1.39310
5	17%	4	1.00000	1.39310
5	17%	5	0.87500	1.20940
6	23%	1	0.87500	1.20940
6	23%	2	0.87500	1.20940
6	23%	3	1.00000	1.39310
6	23%	4	1.00000	1.39310
6	23%	5	1.00000	1.39310

Appendix A2: Statistics

Pimephales promelas

Shapiro - Wilk's Test for Normality		Transform: Arc Sin(Square Root(Y))
D = 0.06749		
W = 0.7138		
Critical W = 0.9	(alpha = 0.01, N = 30)	
Critical W = 0.927	(alpha = 0.05, N = 30)	

Data FAIL normality test (alpha = 0.01).

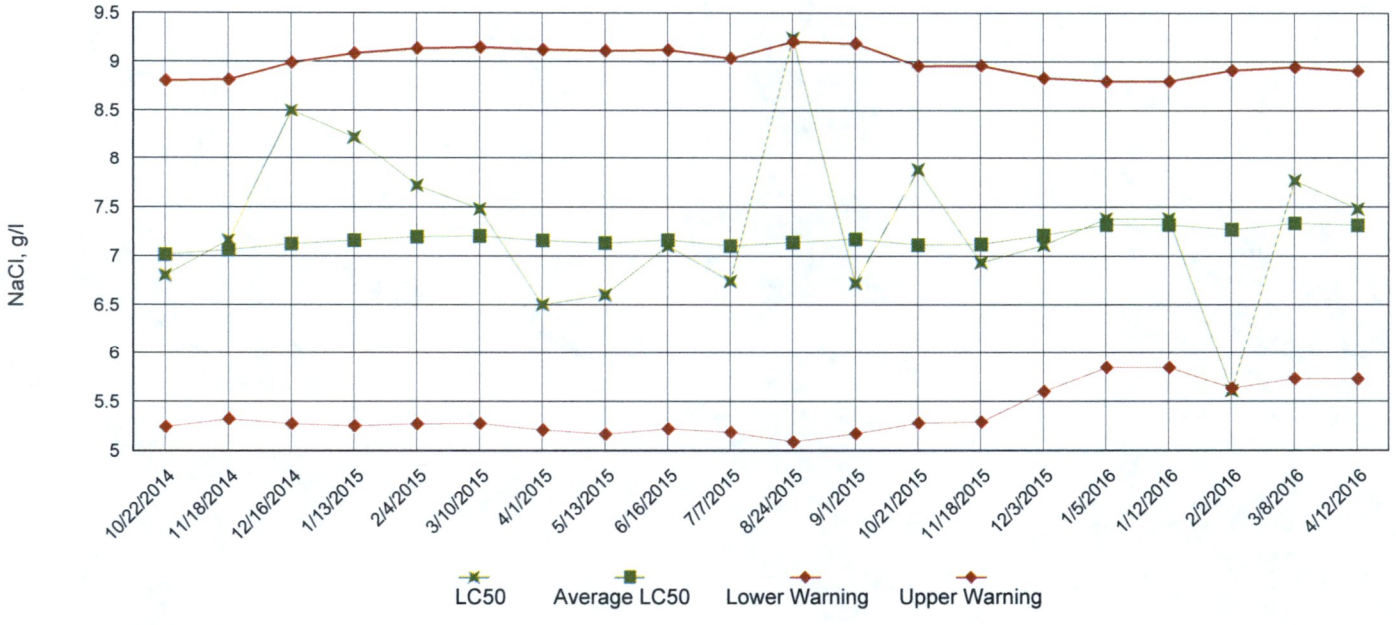
Steel's Many-One Rank Test					Transform: Arc Sin(Square Root(Y))
Ho:Control<Treatment					
Group	Identification	Rank Sum	Critical Value	DF	Sig 0.05
1	Control				
2	7%	27.50	16.00	5.00	
3	10%	27.50	16.00	5.00	
4	13%	27.50	16.00	5.00	
5	17%	25.00	16.00	5.00	
6	23%	22.50	16.00	5.00	

Critical values are 1 tailed (k=5)

Appendix: A3

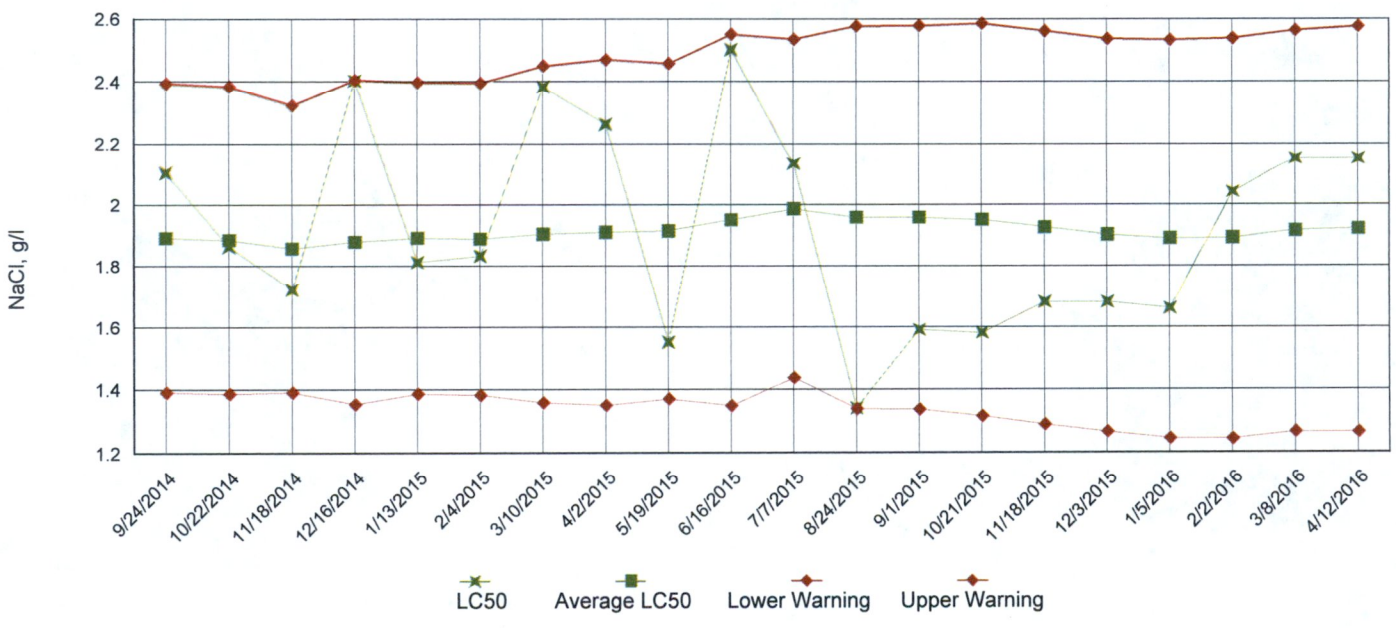
Acute Reference Toxicant, *Pimephales promelas* (Fathead Minnow)

LC50 Survival Data



Acute Reference Toxicant, *Daphnia pulex*

LC50 Survival Data



Appendix: A4

Chemical Data for
Pimephales promelas
and
Daphnia pulex

Day 1		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.8	7.8	7.7	7.8	4.6	7.7
DO, mg/l	Final 1*	7.2	7.2	7.5	7.1	7.3	7.2
DO, mg/l	Final 2*	7.5	7.4	7.4	7.4	7.3	7.4
pH, su	Initial	7.8	7.7	7.7	7.7	7.7	7.6
pH, su	Final 1*	7.6	7.6	7.6	7.6	7.6	7.6
pH, su	Final 2*	7.7	7.7	7.7	7.7	7.6	7.7
Alkalinity, mg/l		32	NA	NA	NA	31	NA
Hardness, mg/l		47	NA	NA	NA	43	NA
Conductivity, umho/cm		170	190	200	210	220	240
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.5	7.4	7.2	7.2	7.2	7.3
DO, mg/l	Final 1*	6.8	7.3	7.5	7.5	7.1	7.4
DO, mg/l	Final 2*	7.3	7.1	6.9	7.0	7.2	7.2
pH, su	Initial	8.0	7.8	7.8	7.8	7.8	7.8
pH, su	Final 1*	7.7	7.6	7.6	7.6	7.6	7.6
pH, su	Final 2*	7.9	7.8	7.8	7.8	7.8	7.8
Alkalinity, mg/l		32	NA	NA	NA	32	NA
Hardness, mg/l		47	NA	NA	NA	43	NA
Conductivity, umho/cm		170	200	200	210	220	240
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

*1 data from *Pimephales promelas*
*2 data from *Daphnia pulex*

Appendix: B

Daphnia pulex Survival Data

Permitee: El Dorado Chemical Company
NPDES No: AR0000752
Contact: Mr. Eddie Pearson
Test Type: 48-hour renewal definitive toxicity test
Dilution Water: Synthetic Soft Water #4327
Test Initiated: May 11, 2016 at 1630
Test Terminated: May 13, 2016 at 1430

Critical Dilution: 17%
Sample Source: Outfall 010
Species Age: <24 hours
Analysts: 280, 304, 310, 314

PERCENT SURVIVAL

24 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

48 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:

a) Low Flow 17%: _____ Yes X No
b) 1/2 Low Flow (NA): _____ Yes _____ No

Pass/Fail #TEM3D. 0

NOEL *Daphnia pulex* lethality #TOM3D: 23%

Coefficient of variation for *Daphnia pulex* survival #TQM3D: 0

Enter percent effluent corresponding to LC-50 below.
LC-50 effluent: >23%
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on April 12, 2016 at 1720 to April 14, 2016 at 1520:
LC-50 effluent: 2.15 g/l
Warning Limits: 1.26 to 2.58 g/l

Appendix: B

Daphnia pulex Chemical Parameters Chart

Permitee: El Dorado Chemical Company
NPDES No: AR0000752
Contact: Mr. Eddie Pearson
Test Type: 48-hour renewal definitive toxicity test
Dilution Water: Synthetic Soft Water #4327
Test Initiated: May 11, 2016 at 1630
Test Terminated: May 13, 2016 at 1430

Critical Dilution: 17%
Sample Source: Outfall 010
Species Age: <24 hours
Analysts: 280, 304, 310, 314

Day 1		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.8	7.8	7.7	7.8	4.6	7.7
DO, mg/l	Final	7.5	7.4	7.4	7.4	7.3	7.4
pH, su	Initial	7.8	7.7	7.7	7.7	7.7	7.6
pH, su	Final	7.7	7.7	7.7	7.7	7.6	7.7
Alkalinity, mg/l		32	NA	NA	NA	31	NA
Hardness, mg/l		47	NA	NA	NA	43	NA
Conductivity, umho/cm		170	190	200	210	220	240
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.5	7.4	7.2	7.2	7.2	7.3
DO, mg/l	Final	7.3	7.1	6.9	7.0	7.2	7.2
pH, su	Initial	8.0	7.8	7.8	7.8	7.8	7.8
pH, su	Final	7.9	7.8	7.8	7.8	7.8	7.8
Alkalinity, mg/l		32	NA	NA	NA	32	NA
Hardness, mg/l		47	NA	NA	NA	43	NA
Conductivity, umho/cm		170	200	200	210	220	240
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Appendix: B

Pimephales promelas Survival Data

Permitee: El Dorado Chemical Company
NPDES No: AR0000752
Contact: Mr. Eddie Pearson
Test Type: 48-hour renewal definitive toxicity test
Dilution Water: Synthetic Soft Water #4327
Test Initiated: May 11, 2016 at 1650
Test Terminated: May 13, 2016 at 1500

Critical Dilution: 17%
Sample Source: Outfall 010
Species Age: 8 days
Analysts: 280, 304, 310, 314

PERCENT SURVIVAL

24 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	100
Rep. B	100	100	100	100	100	100
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	100	100

48 hours	Control	7%	10%	13%	17%	23%
Rep. A	100	100	100	100	100	87.5
Rep. B	100	100	100	100	100	87.5
Rep. C	100	100	100	100	100	100
Rep. D	100	100	100	100	100	100
Rep. E	100	100	100	100	87.5	100

Dunnett's Procedure or Steel's Many-One Rank Test as appropriate. Is the mean survival at 48 hours significantly different (p=0.05) than the control survival for the % effluent corresponding to:

a) Low Flow 17%: _____ Yes X No
b) 1/2 Low Flow (NA): _____ Yes _____ No

Pass/Fail #TEM6C. 0

NOEL *Pimephales promelas* lethality #TOM6C: 23%

Coefficient of variation for *Pimephales promelas* survival #TQM6C: 5.73

Enter percent effluent corresponding to LC-50 below.
LC-50 effluent: >23%
Method of LC-50 calculation: NA

Reference Toxicity Test Performed on April 12, 2016 at 1430 to April 14, 2016 at 1430:
LC-50 effluent: 7.48 g/l
Warning Limits: 5.73 to 8.90 g/l

Appendix: B

Pimephales promelas Chemical Parameters Chart

Permitee:	El Dorado Chemical Company	Critical Dilution:	17%
NPDES No:	AR0000752	Sample Source:	Outfall 010
Contact:	Mr. Eddie Pearson	Species Age:	8 days
Test Type:	48-hour renewal definitive toxicity test	Analysts:	280, 304, 310, 314
Dilution Water:	Synthetic Soft Water #4327		
Test Initiated:	May 11, 2016 at 1650		
Test Terminated:	May 13, 2016 at 1500		

Day 1		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.8	7.8	7.7	7.8	4.6	7.7
DO, mg/l	Final	7.2	7.2	7.5	7.1	7.3	7.2
pH, su	Initial	7.8	7.7	7.7	7.7	7.7	7.6
pH, su	Final	7.6	7.6	7.6	7.6	7.6	7.6
Alkalinity, mg/l		32	NA	NA	NA	31	NA
Hardness, mg/l		47	NA	NA	NA	43	NA
Conductivity, umho/cm		170	190	200	210	220	240
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

Day 2		Control	7%	10%	13%	17%	23%
DO, mg/l	Initial	7.5	7.4	7.2	7.2	7.2	7.3
DO, mg/l	Final	6.8	7.3	7.5	7.5	7.1	7.4
pH, su	Initial	8.0	7.8	7.8	7.8	7.8	7.8
pH, su	Final	7.7	7.6	7.6	7.6	7.6	7.6
Alkalinity, mg/l		32	NA	NA	NA	32	NA
Hardness, mg/l		47	NA	NA	NA	43	NA
Conductivity, umho/cm		170	200	200	210	220	240
Residual Chlorine, mg/l		<0.05	NA	NA	NA	<0.05	NA

AMERICAN INTERPLEX CORPORATION
LABORATORIES

CHAIN OF CUSTODY / ANALYSIS REQUEST FORM

Client: AR 000752 El Dorado Chemical Co
Project Reference: Outfall 010
Project Manager: Edward L Pearson
Sampled By: Edward L Pearson
PO No.:

AIC No.	Sample Identification	Date/Time Collected	GRAB	COMP	MATRIX WATER	MATRIX SOIL	NO OF BOTTLES	ANALYSES REQUESTED: Acute FM 3D
1	Outfall 010	05-11-16 1000		X	X		2	C
		Container Type						P
		Preservative						NO

AIC CONTROL NO: 202075
AIC PROPOSAL NO:
Carrier: RUSH
Received Temperature C: 0.1 (C3)
Remarks:
Field pH calibration on _____ @ _____
Buffer:

G = Glass P = Plastic V = VOA vials H = HCl to pH2 T = Sodium Thiosulfate
NO = none S = Sulfuric acid pH2 N = Nitric acid pH2 B = NaOH to pH12 Z = Zinc acetate A=$(NH_4)_2SO_4$, NH_4OH

Turnaround Time Requested: (Please circle)
(NORMAL) or EXPEDITED IN ____ DAYS
Expedited results requested by: _____
Who should AIC contact with questions:
Phone:_____ Fax:
Report Attention to:
Report Address to:
Email Address:

Relinquished By:	Date/Time	Received By:	Date/Time
Edward L Pearson	05-11-16 1200		
Relinquished By:	Date/Time	Received in Lab By:	Date/Time
		D. BROWN	5-11-16 1445

Comments:

9/2014 FORM 0060

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X6060

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731
Project #: X6060
Outfall: Outfall 006 (contaminated storm water)
Permit #: AR0000752/ AFIN #70-00040
Contact: Mr. Eddie Pearson
Test Dates: June 5 - 7, 2016
Test Type: 48-hour acute toxicity test using *Pimephales promelas* (EPA 2000.0).
48-hour acute toxicity test using *Daphnia pulex* (EPA 2021.0)

Results:

For *Pimephales promelas:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 0- **Pass.**
2. Report the NOEC for survival, Parameter TOM6C - 100.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C - 0.00%.

For *Daphnia pulex:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM3D- 0- **Pass.**
2. Report the NOEC for survival, Parameter TOM3D -100.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 6.59%.

This report contains a total of 33 pages, including this page. The results pertain only to the samples listed in the chain of custody documents in Appendix A. The information contained within meets the requirements set forth by ADEQ. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

THE RESULTS OF TWO 48-HOUR ACUTE TOXICITY TESTS FOR OUTFALL 006 AT

EL DORADO CHEMICAL COMPANY
El Dorado, Arkansas

NPDES #AR0000752
AFIN #70-00040

EPA Methods 2000.0 and 2021.0

Project X6060

Test Dates: June 5 - 7, 2016
Report Date: July 14, 2016

Prepared for:
Mr. Eddie Pearson
El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Prepared by:
Ginger Briggs
Bio-Analytical Laboratories
P.O. Box 527
Doyline, LA 71023
ADEQ #88-0630

BAL
ADEQ #88-0630
Project X6060

TABLE OF CONTENTS

BAL
ADEQ #88-0630
Project X6060

1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two 48-hour acute toxicity tests for Outfall 006 at El Dorado Chemical Company, El Dorado, Arkansas. The test organisms used were the fathead minnow, *Pimephales promelas* and the cladoceran, *Daphnia pulex.* The purpose of this study is to determine if an appropriately dilute effluent sample adversely affects the survival of the test organism. Toxicity is defined as a statistically significant difference at the 95 percent confidence level between the survival of the test organisms in the critical dilution (the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions) compared to the survival of the test organisms in the control. The test endpoints are the No-Observed-Effect-Concentration (NOEC), which is defined as the highest effluent concentration that is not statistically different from the control, and the 48-hour LC_{50}, the concentration in which 50 percent of the test organisms died.

2.0 Methods and Materials

2.1 Test Methods

All methods followed were according to the latest edition of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA-821-R-02-012),"Standard Methods for The Examination of Water and Wastewater. 20th Edition" (APHA 1998. Chemical results using this edition are listed in the report as SM 1997), and BAL's standard operating procedures.

2.2 Test Organisms

The fathead minnows were raised in-house and were approximately three days old at test initiation. The minnows were acclimated to dilution water hardness prior to testing. The *Daphnia pulex* test organisms were also raised in-house at test temperature and were less than 24 hours old at test initiation. Forty-eight hour reference toxicant tests, using sodium chloride (NaCl), were conducted monthly in order to document organism sensitivity and demonstration of capability.

2.3 Dilution Water

Soft reconstituted water made per EPA guidelines was used as the dilution water and the control for the acute tests.

2.4 Test Concentrations

The test concentrations used in the tests were 100.0, 75.0, 56.0, 45.0, 32.0 and 22.0 percent effluent and a reconstituted water control. The critical dilution was defined as 100.0 percent effluent. The tests were conducted using five replicates of eight animals each for a total of 40 animals per concentration.

2.5 Sample Collection

One composite sample of Outfall 006 was collected by El Dorado Chemical personnel on June 4, 2016 at 1600 hours. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 2.8^0 Celsius.

2.6 Sample Preparation

Upon arrival, the sample was logged in, given an identification number and refrigerated unless needed. Prior to use, the sample was warmed to 25 ± 1^0 Celsius. The total residual chlorine level (SM4500-Cl E 1997) was measured in milligrams/Liter (mg/) with a Capital Controls^R amperometric titrator and recorded if present. The total ammonia level was measured in mg/L using a test strip. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements (in mg/L, standard units and umhos/cm, respectively) were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity (SM2320-B 1997) and hardness (SM2340-C 1997) levels were measured in mg/L as $CaCO_3$ on the control and the highest effluent concentration.

2.7 Monitoring of the Tests

The tests were run in a Precision^R dual controlled illuminated incubator at a temperature of 25 ± 1^0 Celsius. An AEMC^R data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

BAL
ADEQ #88-0630
Project X6060

2.8 Data Analysis

The NOEC and LC_{50} values values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

3.0 Results and Discussion

The results of the tests can be found in Table 1. Significant differences in survival were not noted in the critical dilution in either test after 48 hours of exposure (p=.05). The NOEC value for the fathead and *Daphnia pulex* tests was 100.0 percent effluent (p=.05). The 48-hour LC_{50} values could not be calculated in either test because greater than 50.0 percent survival occurred in each effluent concentration.

Table 1: Results of the 48-hour Acute Definitive Toxicity Tests

Dilution Water	Percent Survival	
Test Organism	*Pimephales promelas*	*Daphnia pulex*
Control	100.0	97.5
22.0	100.0	92.5
32.0	100.0	85.0
45.0	100.0	90.0
56.0	100.0	95.0
75.0	100.0	97.5
100.0	100.0	90.0

The 48-hour reference toxicant test results indicated that the test organisms were within the respective sensitivity range. The graphs of the acute reference toxicant tests can be found in Appendix D.

BAL
ADEQ #88-0630
Project X6060

4.0 Conclusions

The sample of Outfall 006 collected from El Dorado Chemical Company, El Dorado, Arkansas, on June 4, 2016, was not found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in the 100.0 percent critical dilution after 48 hours of exposure (p=.05). The 48-hour LC_{50} values could not be calculated because greater than 50.0 percent survival occurred in the 100.0 percent dilution (p=.05).

5.0 References

EPA, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. EPA-821-R-02-012, Office of Water.

EPA, 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System. EPA-833-R-00-003, Office of Wastewater Management.

EPA, 2000. Method Guidance and Recommendations for Whole Effluent (WET) Testing. EPA-821-B-00-04, Office of Water

APHA, 1998. Standard Methods for The Examination of Water and Wastewater. 20th Edition.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

Bio-Analytical Laboratories
3240 Spurgin Road
Post Office Box 627
Doyline, LA 71023
(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

NELAP/LELAP 01975, ADEQ 88-0630, TCEQ T104704278

Laboratory Use Only:

Company: El Dorado Chemical Company
Phone: (870) 863-1484
Address: 4500 Norwest Ave., El Dorado, AR 71731
Fax: (870) 863-7499
Permit #: AR0000752/AFIN 70-00040
Purchase Order:
Sampler's Signature/Printed Name/Affiliation: Edward Pearson / Edward L Pearson / EDCC

Analysis: Chronic Ceriodaphnia; Chronic minnow; Acute minnow(fresh/marine); Acute Daphnia species; Acute Mysid; Acute Ceriodaphnia; Fecal Coliform

Temperature upon arrival: 2.8°c
Thermometer #: 29
Tech: RC
Date: 6/4/16
Lab Control Number:
Project Number: X6060
Temp. upon arrival:
Preservative: (below)

Date Start / Date End	Time Start / Time End	C	G	# and type of container	Sample Identification	Chronic Ceriodaphnia	Chronic minnow	Acute minnow(fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	Lab Control Number	Preservative (below)
06-03-16 / 06-04-16	1600 / 1600	X		6 half gallon	006			X	X				C12521	Ice

Relinquished by/Affiliation:	Date:	Time:	Received by/Affiliation:	Date:	Time:
Edward Pearson	06/04/16	4:45PM	R Callen	6/4/16	1645

Method of Shipment: ____ Lab ____ Bus ____ Fed Ex ____ DHL ____ UPS ✓ Client ____ Other **Tracking #** ____

Comments:

COC Rev. 3.0

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X6060

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 006

Technicians: EGB/RC/MM

Test initiated: Date 6/5/16 Time 1250

Test terminated: Date 6/7/16 Time 1515

Dissolved Oxygen Meter: Model # YSI550A Serial #06E2089 AV
pH Meter: Model #Orion 230A+ Serial #015253
Conductivity Meter: Model # Control Co. Serial #122175539
Amperometric Titrator: Model #Fischer-Porter Serial #92W445766

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/ Final D.O(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness 100%	Alkalinity 100%	Tech
C12521	8.1/96.7%	No	<0.01	NO	6.0	N/A	148.0	24.0	RC
	8.2/106.5%	X/6.2/75.1%							MM

Dilution Water Information

Dilution Water	ID#	Initial D.O (mg/L & %)	Aerate? Minutes/D.O (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH	Hardness	Alkalinity	Tech
Soft H2O	3815	N/A	N/A	N/A	N/A	7.2	52.0	31.4	RC

Test Species Information

Test Species Info.	Species: ID#: D.pulex BAL/H2-12	Species: ID#: P.promelas BAL/060216	Species: ID#:	Species: ID#:
Age	<24 hrs	3days		
Test Container Size	30ml	300ml		
Test volume	25 ml	250ml		
Feeding: Type	2 hrs	prior to		
Amount	test	initiation		
Aeration?	N/A	N/A		
Amount				
Condition of survivors	4.0 (good)	good EGB 6/7		

Comments: pH - 7.1 @ test initiation - RC

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6060

Client EDCC

Sample Description 006

Test started: Date 6/5/16 Time 1250

Test ended: Date 6/7/16 Time 1330 1245

Test Species D. pulex ID# BAL/H2-I2

Technician: 0hour RC 24hour MM 48hour MM 72hour ____ 96hour ____

Time: 0hour 15/1250 24hour 1860 48hour 1245 72hour ____ 96hour ____

Temperature (°C): 0hour 24.7 24hour 25.0 48hour 25.0 72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0/0		N/A																				
0s	A		8	8	8			8.0	7.5/7.8	7.5			7.3	7.5/7.6	7.3			173	220/224	204		
	B		8	8	8																	
	C		8	7	7																	
	D		8	8	8																	
	E		8	8	8																	
22.0	A		8	8	8			8.0	7.4/7.7	7.4			7.1	7.5/7.5	7.4			272	303/268	294		
	B		8	8	5																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	MM	MM			RC	MM	MM			RC	MM	MM		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6060

Client EDCC

Sample Description 006

Test started: Date 6/5/16 Time 1250

Test ended: Date 6/7/16 Time 1330/1245 (MW 6/7/16)

Test Species D. pulex ID# BAL/H2-I2

Technician: Ohour RC 24hour MM 48hour MM 72hour / 96hour /

Time: Ohour 1250 24hour 1400 48hour 1345 72hour / 96hour /

Temperature (°C): Ohour 24.7 24hour 25.0 48hour 25.0 72hour / 96hour /

Test Dilution %	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
		N/A																				
32.0	A		8	8	7			8.0	7.1/7.7	7.3			7.2	7.5/7.5	7.4			310	335/350	335		
	B		8	8	7																	
	C		8	8	7																	
	D		8	8	8																	
	E		8	8	5																	
45.0	A		8	8	8			8.0	7.4/7.7	7.4			7.2	7.4/7.4	7.4			361	384/362	388		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	7	6																	
Chemistry Tech prerenewal/postrenewal								RC	MM	MM			RC	MM	MM			RC	MM	MM		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6060

Client EDCC

Sample Description OOC

Test started: Date 6/5/16 Time 1250

Test ended: Date 6/7/16 Time ~~1245~~ 1245

Test Species D. pulex ID# BAL/Ha-I2

Technician:	Ohour RC	24hour MM	48hour MM	72hour /	96hour /
Time:	Ohour 1550	24hour 1800	48hour 1245	72hour /	96hour /
Temperature (°C):	Ohour 24.7	24hour 25.0	48hour 25.0	72hour /	96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
C/O		N/A																				
56.0	A		8	6	6			8.9	7.4/7.6	7.3			7.3	7.4/7.6	7.5			415	434/413	441		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
75.0	A		8	8	8			8.0	7.2/7.8	7.3			7.3	7.3/7.5	7.4			489	98/487	520		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	7																	
Chemistry Tech prerenewal/postrenewal								RC	MM/MM				RC	MM/MM				RC	MM/MM			

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6060

Client EDCC

Sample Description 006

Test started: Date 6/5/16 Time 1250

Test ended: Date 6/7/16 Time 1295

Test Species D. pulex ID# BAL/H2-I2

Technician: Ohour RC 24hour MM 48hour MM 72hour / 96hour /

Time: Ohour 1250 24hour 1400 48hour 1245 72hour / 96hour /

Temperature (°C): Ohour 24.7 24hour 25.0 48hour 25.0 72hour / 96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
C/O		N/A																				
100.0	A		8	8	8			8.0	7.3/7.6	7.4			7.3	7.3/7.4	7.4			595/596	628			
	B		8	8	7																	
	C		8	8	7																	
	D		8	8	7																	
	E		8	8	7																	
100.0	A		8						/					/					/			
pH adj	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	MM/MM	MM			RC	MM/MM	MM			RC	MM/MM	MM		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6060

Client EDCC

Sample Description 006

Test started: Date 6/5/16 Time 1500

Test ended: Date 6/7/16 Time 1515

Test Species P. promelas ID# BAL060216

Technician:	0hour RC	24hour RC	48hour EGB	72hour /	96hour /
Time:	0hour 1500	24hour 1855	48hour 1515	72hour /	96hour /
Temperature (°C):	0hour 24.7	24hour 24.9	48hour 24.9	72hour /	96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
%		N/A	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0s	A		8	8	8			8.0	7.6/7.8	7.5			7.3	7.4/7.6	7.1			173	212/172	189		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
22.0	A		8	8	8			8.0	7.6/7.7	7.5			7.1	7.3/7.5	7.1			272	287/268	258		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC/MM	EGB			RC	RC/MM	EGB			RC	RC/MM	EGB		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6060

Client EDCC

Sample Description 006

Test started: Date 6/5/16 Time 1500

Test ended: Date 6/7/16 Time 1515

Test Species P. promelas ID# BAL/060216

Technician:	Ohour RC	24hour RC	48hour EOB	72hour /	96hour /
Time:	Ohour 1506	24hour 1855	48hour 1515	72hour /	96hour /
Temperature (°C):	Ohour 24.7	24hour 24.9	48hour 24.9	72hour /	96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0/0		N/A																				
32.0	A		8	8	8			8.0	7.6/7.7	7.3			7.2	7.3/7.5	7.1			310	317/309	322		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
45.0	A		8	8	8			8.0	7.6/7.7	7.4			7.2	7.3/7.6	7.1			361	370/362	377		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC/MM	EOB			RC	RC/MM	EOB			RC	RC/MM	EOB		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6060

Client EDCC

Sample Description OOC

Test started: Date 6/5/16 Time 1500

Test ended: Date 6/9/16 Time 1515

Test Species P. promelas ID# BAL060216

Technician:	Ohour RC	24hour RC	48hour ECB	72hour /	96hour /
Time:	Ohour 1500	24hour 1855	48hour 1515	72hour /	96hour /
Temperature (°C):	Ohour 24.7	24hour 24.9	48hour 24.9	72hour /	96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
C/O		N/A																				
56.0	A		8	8	8			8.0	7.6 / 7.6	7.3			7.3	7.4 / 7.6	7.2			415	425 / 434	431		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
15.0	A		8	8	8			8.0	7.7 / 7.8	7.3			7.3	7.4 / 7.5	7.2			489	487 / 487	505		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC / mm	ECB			RC	RC / mm	ECB			RC	RC / mm	ECB		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6060

Client EDCC

Sample Description 006

Test started: Date 6/5/16 Time 1500

Test ended: Date 6/7/16 Time 1515

Test Species P. promelas ID# BA/060216

Technician: Ohour RC 24hour RC 48hour EB 72hour ____ 96hour ____

Time: Ohour 1500 24hour 1855 48hour 1513 72hour ____ 96hour ____

Temperature (°C): Ohour 24.7 24hour 24.9 48hour 24.9 72hour ____ 96hour ____

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
C/O		N/A																				
100.0	A		8	8	8			8.0	1.6 / 1.6	7.7			7.3	7.3 / 7.4	7.2			595	600 / 596	622		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
100.0	A		8						/					/					/			
pH adj	B		8																			
	C		8																			
	D		8																			
	E		8																			
Chemistry Tech prerenewal/postrenewal								RC	RC / MW	EB			RC	RC / MW	EB			RC	RC / MW	EB		

ACUTE2 Rev 1.0

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

Start Date:	6/5/2016	Test ID:	X6060DP	Sample ID:	AR0000752/006
End Date:	6/7/2016	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/4/2016	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	DP-Daphnia pulex
Comments:					

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	0.8750	1.0000	1.0000
22	1.0000	0.6250	1.0000	1.0000	1.0000
32	0.8750	0.8750	0.8750	1.0000	0.6250
45	1.0000	1.0000	1.0000	0.8750	0.6250
56	0.7500	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	0.8750
100	1.0000	0.8750	0.8750	0.8750	0.8750

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5		
22	0.9250	0.9487	1.2968	0.9117	1.3931	16.600	5	27.00	16.00
32	0.8500	0.8718	1.1866	0.9117	1.3931	14.581	5	19.50	16.00
45	0.9000	0.9231	1.2601	0.9117	1.3931	16.693	5	24.50	16.00
56	0.9500	0.9744	1.3239	1.0472	1.3931	11.684	5	27.00	16.00
75	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5	27.50	16.00
100	0.9000	0.9231	1.2462	1.2094	1.3931	6.591	5	20.00	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.84016	0.934	-1.4302	1.66169
Bartlett's Test indicates equal variances (p = 0.24)	7.96266	16.8119		

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs D-Control				

Reviewed by: EJB 6/23/16

Acute Fish Test-48 Hr Survival

Start Date:	6/5/2016	Test ID:	X6060PP	Sample ID:	AR0000752/006
End Date:	6/7/2016	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/4/2016	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas
Comments:					

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
22	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000
45	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	1.0000	1.0000
100	1.0000	1.0000	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
22	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
45	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
56	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
75	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
100	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00

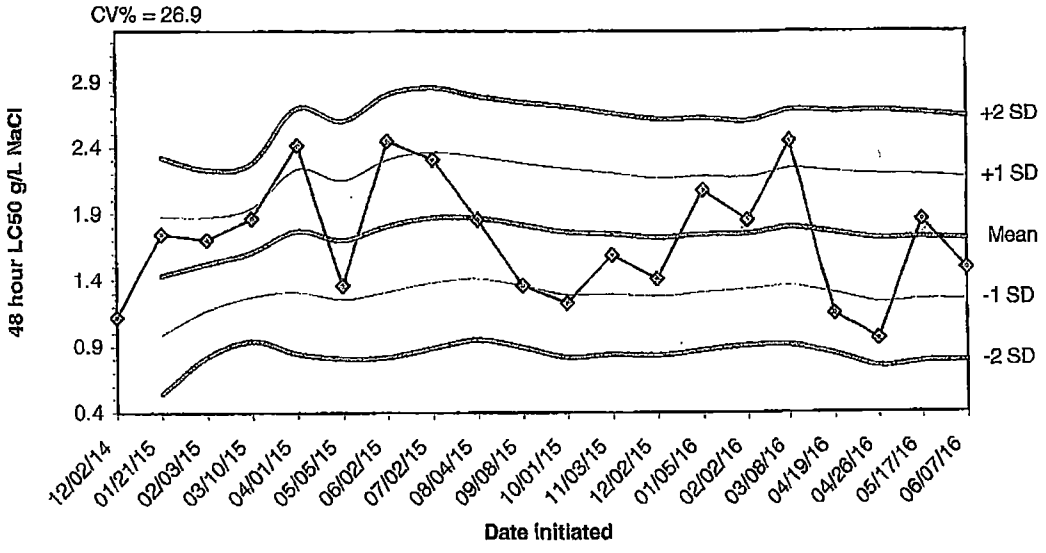
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	1	0.934		
Equality of variance cannot be confirmed				

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Steel's Many-One Rank Test	100	>100		1
Treatments vs D-Control				

ECB 6/23/16

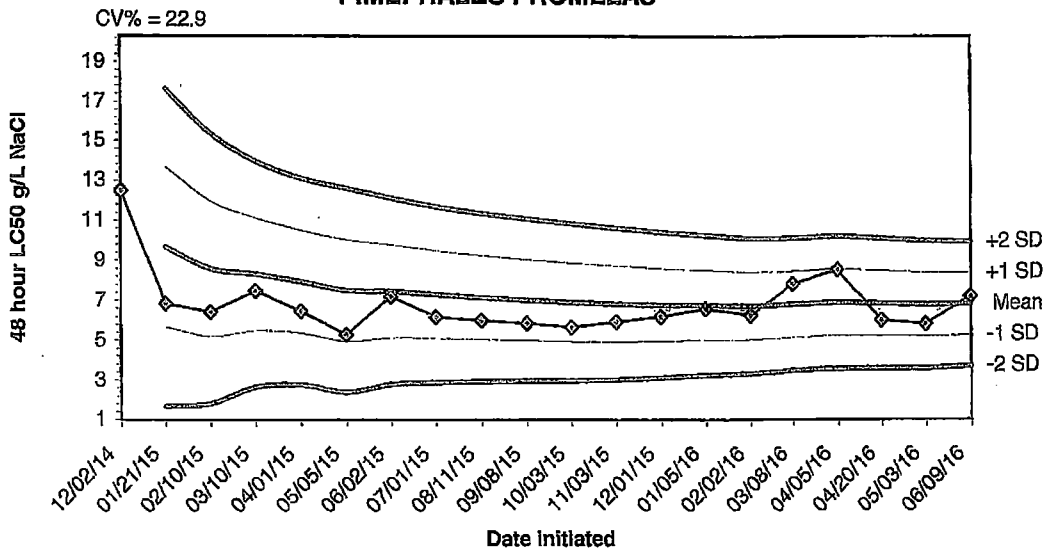
APPENDIX D
QUALITY ASSURANCE CHARTS

2016 ACUTE REFERENCE TOXICANT TEST RESULTS FOR DAPHNIA PULEX



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/02/14	1.1200					
01/21/15	1.7500	1.4350	0.9895	0.5440	1.8805	2.3260
02/03/15	1.7100	1.5267	1.1739	0.8212	1.8794	2.2322
03/10/15	1.8700	1.6125	1.2772	0.9419	1.9478	2.2831
04/01/15	2.4200	1.7740	1.3106	0.8472	2.2374	2.7008
05/05/15	1.3600	1.7050	1.2574	0.8098	2.1526	2.6002
06/02/15	2.4500	1.8114	1.3152	0.8190	2.3077	2.8039
07/02/15	2.3100	1.8738	1.3817	0.8896	2.3658	2.8579
08/04/15	1.8600	1.8722	1.4119	0.9516	2.3325	2.7929
09/08/15	1.3600	1.8210	1.3578	0.8945	2.2842	2.7475
10/01/15	1.2300	1.7673	1.2931	0.8188	2.2415	2.7157
11/03/15	1.5900	1.7525	1.2975	0.8424	2.2075	2.6626
12/02/15	1.4100	1.7262	1.2803	0.8344	2.1721	2.6180
01/05/16	2.0800	1.7514	1.3127	0.8740	2.1901	2.6289
02/02/16	1.8600	1.7587	1.3350	0.9113	2.1824	2.6060
03/08/16	2.4500	1.8019	1.3576	0.9132	2.2462	2.6905
04/19/16	1.1500	1.7635	1.3052	0.8469	2.2219	2.6802
04/26/16	0.9600	1.7189	1.2356	0.7523	2.2022	2.6855
05/17/16	1.8600	1.7263	1.2555	0.7847	2.1971	2.6679
06/07/16	1.4900	1.7145	1.2532	0.7919	2.1758	2.6371

2016 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES PROMELAS



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/02/14	12.5000					
01/21/15	6.8500	9.6750	5.6798	1.6847	13.6702	17.6653
02/10/15	6.4200	8.5900	5.1970	1.8040	11.9830	15.3760
03/10/15	7.4800	8.3125	5.4871	2.6617	11.1379	13.9633
04/01/15	6.4800	7.9460	5.3655	2.7851	10.5265	13.1069
05/05/15	5.2900	7.5033	4.9533	2.4032	10.0534	12.6034
06/02/15	7.2000	7.4600	5.1293	2.7986	9.7907	12.1214
07/01/15	6.1800	7.3000	5.0953	2.8905	9.5047	11.7095
08/11/15	6.0000	7.1556	5.0482	2.9408	9.2629	11.3703
09/08/15	5.8600	7.0260	4.9973	2.9687	9.0547	11.0833
10/03/15	5.6700	6.9027	4.9352	2.9677	8.8702	10.8377
11/03/15	5.9200	6.8208	4.9236	3.0263	8.7181	10.6154
12/01/15	6.1800	6.7715	4.9464	3.1212	8.5967	10.4219
01/05/16	6.5900	6.7586	5.0043	3.2501	8.5128	10.2670
02/02/16	6.2700	6.7260	5.0309	3.3357	8.4211	10.1163
03/08/16	7.8200	6.7944	5.1340	3.4737	8.4547	10.1150
04/05/16	8.5300	6.8965	5.2347	3.5729	8.5583	10.2201
04/20/16	6.0100	6.8472	5.2216	3.5959	8.4729	10.0986
05/03/16	5.8100	6.7926	5.1949	3.5973	8.3903	9.9880
06/09/16	7.2000	6.8130	5.2553	3.6975	8.3707	9.9285

APPENDIX E
AGENCY FORMS

Acute Forms
Daphnia pulex Survival

Permittee: El Dorado Chemical - Outfall 006
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 6/03/16** **To: 6/04/16**
From: **To:**
Test Initiated: 6/05/16
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	22.0	32.0	45.0	56.0	75.0	100.0
24-hour	A	100.0	100.0	100.0	100.0	75.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	87.5	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	87.5	100.0	100.0	100.0
48-hour	A	100.0	100.0	87.5	100.0	75.0	100.0	100.0
	B	100.0	62.5	87.5	100.0	100.0	100.0	87.5
	C	87.5	100.0	87.5	100.0	100.0	100.0	87.5
	D	100.0	100.0	100.0	87.5	100.0	100.0	87.5
	E	100.0	100.0	62.5	75.0	100.0	87.5	87.5
	Mean	97.5	92.5	85.0	90.0	95.0	97.5	90.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100.0%) **YES** **X** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = N/A% effluent
95 % confidence limits:
Method of LC_{50} calculation:
3. If you answered NO to 1.a) enter (P) otherwise enter (F) P
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Daphnia pulex 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 006
NPDES Number: AR0000752/ AFIN 70-00040
Contact: Eddie Pearson
Analyst: Callahan, Merritt
Sample Collected **From:** **Date 6/03/16** **Time 1600**
To: **Date 6/04/16** **Time 1600**
Test Begin **Date 6/05/16** **Time 1250**
Test End **Date 6/06/16** **Time 1245**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs.	24hrs.	48hrs.	0hrs.	24hrs.	48hrs.	0hrs.	24hrs.	48hrs.	0hrs.	24hrs.	48hrs.	0hrs.	24hrs.	48hrs.
0	8.0	7.8	7.5	24.7	25.0	25.0	31.4			52.0			7.3	7.6	7.3
22.0	8.0	7.7	7.4	24.7	25.0	25.0							7.1	7.5	7.4
32.0	8.0	7.7	7.3	24.7	25.0	25.0							7.2	7.5	7.4
45.0	8.0	7.7	7.4	24.7	25.0	25.0							7.2	7.6	7.4
56.0	8.0	7.6	7.3	24.7	25.0	25.0							7.3	7.6	7.5
75.0	8.0	7.8	7.3	24.7	25.0	25.0							7.3	7.5	7.4
100.0	8.0	7.6	7.4	24.7	25.0	25.0	24.0			148.0			7.3	7.4	7.4

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

Acute Forms
Pimephales promelas Survival

Permittee: El Dorado Chemical - Outfall 006
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 6/03/16** **To: 6/04/16**
From: **To:**
Test Initiated: 6/05/16
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	22.0	32.0	45.0	56.0	75.0	100.0
24-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
48-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	E	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Mean	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100.0%) **YES** **X** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = N/A% effluent
95 % confidence limits:
Method of LC_{50} calculation:
3. If you answered NO to 1.a) enter (P) otherwise enter (F) P
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): N/A
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Pimephales promelas 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 006
NPDES Number: AR0000752/ AFIN 70-00040
Contact: Eddie Pearson
Analyst: Callahan, Briggs
Sample Collected **From:** **Date 6/03/16** **Time 1600**
To: **Date 6/04/16** **Time 1600**
Test Begin **Date 6/05/16** **Time 1500**
Test End **Date 6/06/16** **Time 1515**

Parameter	D.O			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	8.0	7.8	7.5	24.7	24.9	24.9	31.4			52.0			7.3	7.6	7.1
22.0	8.0	7.7	7.5	24.7	24.9	24.9							7.1	7.5	7.1
32.0	8.0	7.7	7.3	24.7	24.9	24.9							7.2	7.5	7.1
45.0	8.0	7.7	7.4	24.7	24.9	24.9							7.2	7.6	7.1
56.0	8.0	7.6	7.3	24.7	24.9	24.9							7.3	7.6	7.2
75.0	8.0	7.8	7.3	24.7	24.9	24.9							7.3	7.5	7.2
100.0	8.0	7.6	7.7	24.7	24.9	24.9	24.0			148.0			7.3	7.4	7.2

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

APPENDIX F
REPORT QUALITY ASSURANCE FORM

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-259-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM

Client: El Dorado Chemical /006

Project#: X6060

Chain of Custody Documents Checked by: RC 6/27/16
Technician/Date

Raw Data Documents Checked by: RC 6/27/16
Technician/Date

Statistical Analysis Package Checked by: EGB 6/23/16
Quality Manager/Date

Quality Control Data Checked by: EGB 6/23/16
Quality Manager/Date

Report Checked by: EGB 7/14/16
Quality Manager/Date

I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.

Cindy L. Bruggs, BS — 7/14/16

Quality Manager — **Date**

Bio-Analytical Laboratories (BAL)
ADEQ#88-0630
Project X6061

Bio-Analytical Laboratories' Executive Summary

Permittee: El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731
Project #: X6061
Outfall: Outfall 007 (contaminated storm water)
Permit #: AR0000752/ AFIN #70-00040
Contact: Mr. Eddie Pearson
Test Dates: June 5 - 7, 2016
Test Type: 48-hour acute toxicity test using *Pimephales promelas* (EPA 2000.0).
48-hour acute toxicity test using *Daphnia pulex* (EPA 2021.0)

Results:

For *Pimephales promelas:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM6C- 1- **Fail.**
2. Report the NOEC for survival, Parameter TOM6C - 75.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM6C - 0.00%.

For *Daphnia pulex:*

1. If the NOEC for survival is less than the critical dilution (100.0%), enter a "1"; otherwise, enter a "0" for Parameter No. TEM3D- 1- **Fail**
2. Report the NOEC for survival, Parameter TOM3D -32.0%.
3.Report the highest (critical dilution or control) Coefficient of Variation, Parameter TQM3D - 38.30%.

Adjusting the pH from 4.6 to a range of 6.0-9.0 reduced the lethal effects in both tests.

This report contains a total of 35 pages, including this page. The results pertain only to the samples listed in the chain of custody documents in Appendix A. The information contained within meets the requirements set forth by ADEQ. The chemical data in this report is for monitoring purposes only and should not be reported on discharge monitoring reports.

Bio-Analytical Laboratories

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THE RESULTS OF TWO 48-HOUR ACUTE TOXICITY TESTS FOR OUTFALL 007 AT

EL DORADO CHEMICAL COMPANY
El Dorado, Arkansas

NPDES #AR0000752
AFIN #70-00040

EPA Methods 2000.0 and 2021.0

Project X6061

Test Dates: June 5 - 7, 2016
Report Date: July 14, 2016

Prepared for:
Mr. Eddie Pearson
El Dorado Chemical Company
P.O. Box 231
El Dorado, AR 71731

Prepared by:
Ginger Briggs
Bio-Analytical Laboratories
P.O. Box 527
Doyline, LA 71023
ADEQ #88-0630

BAL
ADEQ #88-0630
Project X6061

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BAL
ADEQ #88-0630
Project X6061

1.0 Introduction

Bio-Analytical Laboratories (BAL), Doyline, Louisiana conducted two 48-hour acute toxicity tests for Outfall 007 at El Dorado Chemical Company, El Dorado, Arkansas. The test organisms used were the fathead minnow, *Pimephales promelas* and the cladoceran, *Daphnia pulex*. The purpose of this study is to determine if an appropriately dilute effluent sample adversely affects the survival of the test organism. Toxicity is defined as a statistically significant difference at the 95 percent confidence level between the survival of the test organisms in the critical dilution (the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions) compared to the survival of the test organisms in the control. The test endpoints are the No-Observed-Effect-Concentration (NOEC), which is defined as the highest effluent concentration that is not statistically different from the control, and the 48-hour LC_{50}, the concentration in which 50 percent of the test organisms died.

2.0 Methods and Materials

2.1 Test Methods

All methods followed were according to the latest edition of "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms" (EPA-821-R-02-012),"Standard Methods for The Examination of Water and Wastewater. 20th Edition" (APHA 1998. Chemical results using this edition are listed in the report as SM 1997), and BAL's standard operating procedures.

2.2 Test Organisms

The fathead minnows were raised in-house and were approximately three days old at test initiation. The minnows were acclimated to dilution water hardness prior to testing. The *Daphnia pulex* test organisms were also raised in-house at test temperature and were less than 24 hours old at test initiation. Forty-eight hour reference toxicant tests, using sodium chloride (NaCl), were conducted monthly in order to document organism sensitivity and demonstration of capability.

BAL
ADEQ #88-0630
Project X6061

2.3 Dilution Water

Soft reconstituted water made per EPA guidelines was used as the dilution water and the control for the acute tests.

2.4 Test Concentrations

The test concentrations used in the tests were 100.0, 75.0, 56.0, 50.0, 45.0, and 32.0 percent effluent and a reconstituted water control. The critical dilution was defined as 100.0 percent effluent. The tests were conducted using five replicates of eight animals each for a total of 40 animals per concentration.

2.5 Sample Collection

One composite sample of Outfall 007 was collected by El Dorado Chemical personnel on June 4, 2016 at 1615 hours. Upon completion of collection, the sample was packed in ice and delivered to the laboratory by BAL personnel. The temperature upon arrival was 3.7^0 Celsius.

2.6 Sample Preparation

Upon arrival, the sample was logged in, given an identification number and refrigerated unless needed. Prior to use, the sample was warmed to 25 ± 1^0 Celsius. The total residual chlorine level (SM4500-Cl E 1997) was measured in milligrams/Liter (mg/) with a Capital Controls^R amperometric titrator and recorded if present. The total ammonia level was measured in mg/L using a test strip. Dissolved oxygen (SM4500-O G 1997), pH (SM4500-H+ B 1997) and conductivity (SM2510-B 1997) measurements (in mg/L, standard units and umhos/cm, respectively) were taken on the control and each test concentration at test initiation, at each renewal and at test termination. Alkalinity (SM2320-B 1997) and hardness (SM2340-C 1997) levels were measured in mg/L as $CaCO_3$ on the control and the highest effluent concentration. The pH of the sample was initially 4.6. It was adjusted to a range of 6.0-9.0 using 1.0 Normal Sodium Hydroxide. An extra 100.0 percent pH-adjusted test concentration was added to both tests.

2.7 Monitoring of the Tests

The tests were run in a Precision^R dual controlled illuminated incubator at a temperature of 25 ± 1^0 Celsius. An AEMC^R data logger was used to monitor diurnal temperature throughout the testing period. Light cycle and intensity were recorded twice a month.

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Project X6061

2.8 Data Analysis

The NOEC and LC_{50} values values were obtained by approved EPA methods of analysis, using the ToxCalc statistical program.

3.0 Results and Discussion

The results of the tests can be found in Table 1. Significant differences in survival were noted in the critical dilution in either test after 48 hours of exposure (p=.05). The NOEC value for the fathead minnow and *Daphnia pulex* tests was 75.0 and 32.0 percent effluent, respectively (p=.05). The 48-hour LC_{50} value for the fathead minnow and *Daphnia pulex* tests were 84.98 and 74.30 percent effluent, respectively (p = .05). Raising the pH significantly reduced the lethal effects.

Table 1: Results of the 48-hour Acute Definitive Toxicity Tests

Percent Effluent	Percent Survival	
Test Organism	*Pimephales promelas*	*Daphnia pulex*
Control	100.0	97.5
22.0	100.0	97.5
32.0	97.5	82.5
45.0	100.0	77.5
56.0	100.0	80.0
75.0	95.0	75.0
100.0	0.0	2.5
100.0 pH adjusted	95.0	97.5

The 48-hour reference toxicant test results indicated that the test organisms were within the respective sensitivity range. The graphs of the acute reference toxicant tests can be found in Appendix D.

BAL
ADEQ #88-0630
Project X6061

4.0 Conclusions

The sample of Outfall 007 collected from El Dorado Chemical Company, El Dorado, Arkansas, on June 4, 2016, was found to be lethally toxic to the fathead minnow test organisms nor the *Daphnia pulex* test organisms in the 100.0 percent critical dilution after 48 hours of exposure (p=.05). The 48-hour LC_{50} value for the fathead minnow and the *Daphnia pulex* tests was 84.98 and 74.30 percent effluent, respectively (p=.05). Raising the pH of the effluent to a range of 6.0-9.0 significantly reduced the lethal effect (p=.05).

BAL
ADEQ #88-0630
Project X6061

5.0 References

EPA, 2002. Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition. EPA-821-R-02-012, Office of Water.

EPA, 2000. Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System. EPA-833-R-00-003, Office of Wastewater Management.

EPA, 2000. Method Guidance and Recommendations for Whole Effluent (WET) Testing. EPA-821-B-00-04, Office of Water

APHA, 1998. Standard Methods for The Examination of Water and Wastewater. 20th Edition.

APPENDIX A
CHAIN-OF-CUSTODY DOCUMENTS

Bio-Analytical Laboratories
3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023
(318) 745-2772
1-800-256-1245
Fax: (318) 746-2779

NELAP/LELAP 01975, ADEQ 88-0630, TCEQ T104704278

Laboratory Use Only:

Company: El Dorado Chemical Company	**Phone:** (870) 863-1484
Address: 4500 Norwest Ave., El Dorado, AR 71731	**Fax:** (870) 863-7499
Permit #: AR0000752/AFIN 70-00040	**Purchase Order:**
Sampler's Signature/Printed Name/Affiliation: Edward L Pearson / Edward L Pearson / EDCC	

Analysis:

Date Start / Date End	Time Start / Time End	C	G	# and type of container	Sample Identification	Chronic Ceriodaphnia	Chronic minnow	Acute minnow (fresh/marine)	Acute Daphnia species	Acute Mysid	Acute Ceriodaphnia	Fecal Coliform	Lab Control Number:	Preservative: (below)
06-03-16 06-04-16	1615 1615	X		6 half gallon	007			X	X				C12522	Ice

Temperature upon arrival: 3.7°c
Thermometer #: 29
Tech: RC
Date: 6/4/16

Project Number: X6061

Temp. upon arrival:

Relinquished by/Affiliation: Edward L Pearson	**Date:** 06/04/16	**Time:** 4:45 PM	**Received by/Affiliation:** R Callahan	**Date:** 6/4/16	**Time:** 1645
Relinquished by/Affiliation:	**Date:**	**Time:**	**Received by/Affiliation:**	**Date:**	**Time:**
Relinquished by/Affiliation:	**Date:**	**Time:**	**Received by/Affiliation:**	**Date:**	**Time:**

Method of Shipment: ____ Lab ____ Bus ____ Fed Ex ____ DHL ____ UPS ____ Client ____ Other **Tracking #** ____

Comments:

COC Rev. 3.0

APPENDIX B
RAW DATA SHEETS

BIO-ANALYTICAL LABORATORIES
ACUTE TOXICITY TEST WATER QUALITY DATA

Project# X6061

Client: EDCC/El Dorado Chemical Company

Address: 4500 Northwest Ave El Dorado AR 71731

NPDES#AR0000752 Outfall 007

Technicians: EGB/RC/MM

Test initiated: Date 6/5/16 Time 1250

Test terminated: Date 6/7/16 Time 1500

Dissolved Oxygen Meter: Model # YSI550A Serial #06E2089 AV
pH Meter: Model #Orion 230A+ Serial #015253
Conductivity Meter: Model # Control Co. Serial #80277924
Amperometric Titrator: Model #Fischer-Porter Serial #92W445766

Sample Information

Sample ID#	Initial D.O. (mg/L and %)	Aerate? Minutes/ Final D.O(mg/L & %)	Total Residual Chlorine (mg/L)	Dechlorinated? Amount?	Ammonia (NH3) mg/L	Salinity	Hardness	Alkalinity	Tech
					EGB 6/5/16		100%	100%	
C12522	8.2/96 / 9.2/108.9%	NO / 60/8.3/98.8%	<0.01	NO	30	N/A	148.0	94.0	RC
									MM

Dilution Water Information

Dilution Water	ID#	Initial D.O (mg/L & %)	Aerate? Minutes/D.O (mg/L & %)	Total Residual Chlorine (mg/L)	Ammonia (NH3) mg/L	pH	Hardness	Alkalinity	Tech
Soft H2O	3875	N/A	N/A	N/A	N/A	7.2	52.0	31.4	RC

Test Species Information

Test Species Info.	Species: ID#: D.pulex BAC/H2-I2	Species: ID#: P.promelas BAC 060216	Species: ID#:	Species: ID#:
Age	<24hrs	3 days		
Test Container Size	30ml	300ml		
Test volume	25ml	250ml		
Feeding: Type	2 hrs	prior to		
Amount	test	initiation		
Aeration?	N/A	N/A		
Amount				
Condition of survivors	good MM	good EGB 6/7/16		

Comments: pH = 4.6 prior to test initiation = adjusted to >6.0 - <9.0 (6.8) w/ NaOH. 0.20 microliters RC

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6061

Client EDCC

Test started: Date 6/5/16 Time 1250

Test ended: Date 6/7/16 Time 1330

Sample Description 007 Test Species D. pulex ID# BAL/Hz-I2

Technician: Ohour RC 24hour MM 48hour MM 72hour / 96hour /

Time: Ohour 1250 24hour 1836 48hour 1330 72hour / 96hour /

Temperature (°C): Ohour 24.7 24hour 25.0 48hour 25.0 72hour / 96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
0s	A		8	8	8	8		7.9	7.9 / 7.7	7.5			7.3	7.5 / 7.6	7.5			744	833 / 688	800		
	B		8	8	7	8																
	C		8	8	7	7																
	D		8	8	8	8																
	E		8	6	6	8																
32.0	A		8	8	8			8.0	7.1 / 7.8	7.5			7.0	7.3 / 7.0	7.3			848	889 / 818	881		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
				8	8																	
Chemistry Tech prerenewal/postrenewal								RC	MM	MM			RC	MM	MM			RC	MM	MM		

ACUTE2 Rev 1.0

* Used control from EDCC 006 X6060. Same lot of organisms EB 6/22/16

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6061

Client EDCC

Sample Description 007

Test started: Date 6/5/16 Time 1250 (RC 6/5/16 R)

Test ended: Date 6/7/16 Time 1330

Test Species D. pulex ID# BAL/H2-I2

Technician:	Ohour RC	24hour MM	48hour MM	72hour /	96hour /
Time:	Ohour 1250	24hour 1830	48hour 1330	72hour /	96hour /
Temperature (°C):	Ohour 24.1	24hour 25.0	48hour 25.0	72hour /	96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
%		N/A	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
45.0	A		8	7	87			8.0	7.1/7.9	7.4			6.8	7.4/6.7	7.3			677	1108/1078	1248		
	B		8	8	6																	
	C		8	7	7																	
	D		8	8	6																	
	E		8	8	7																	
50.0	A		8	8	7			8.0	7.1/7.9	7.5			6.6	7.3/6.4	7.3			1160	1282/1172	1347		
	B		8	8	6																	
	C		8	8	7																	
	D		8	6	6																	
	E		8	6	5																	
Chemistry Tech prerenewal/postrenewal								RC	MM/MM	MM			RC	MM/MM	MM			RC	MM/MM	MM		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6061

Client EDCC

Sample Description 007

Test started: Date 6/5/16 Time 1250

Test ended: Date 6/7/16 Time 1330

Test Species D. pulex ID# BAL Hz-Iz

Technician:	Ohour RC	24hour MM	48hour MM	72hour /	96hour /
Time:	Ohour 1250	24hour 1838	48hour 1330	72hour /	96hour /
Temperature (°C):	Ohour 24.7	24hour 25.0	48hour 25.0	72hour /	96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
0/0		N/A																				
56.0	A		8	8	6	6		8.0	7.2/7.0	7.3			6.3	7.2/6.0	7.2			1274	1280/1272	1343		
	B		8	5	5	5																
	C		8	8	8	7																
	D		8	8	7	6																
	E		8	6	6	6																
75.0	A		8	4	6			8.0	7.0/7.0	7.5			5.2	5.3	7.0			1618	1652/1622	1720		
	B		8	6	5																	
	C		8	7	7																	
	D		8	6	6																	
	E		8	>6																		
Chemistry Tech prerenewal/postrenewal								RC	MM/MM	MM			RC	MM/MM	MM			RC	MM/MM	MM		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6061

Client EDCC

Sample Description 007

Test started: Date 6/5/16 Time 1250

Test ended: Date 6/7/16 Time 1330

Test Species D. pulex ID# BAL Hz - Iz

Technician: Ohour RC 24hour MM 48hour MM 72hour / 96hour /

Time: Ohour 1250 24hour 1836 48hour 1330 72hour / 96hour /

Temperature (°C): Ohour 24.7 24hour 25.0 48hour 25.0 72hour / 96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
%		N/A	0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
100.0	A		8	2	1			8.1	7.1/7.9	7.2			4.6	6.3/4.7	5.6			2020	1530/2020	2100		
	B		8	1	0																	
	C		8	0	0																	
	D		8	5	0																	
	E		8	0	0																	
100.0																						
pH adj	A		8	8	8			8.0	7.3/7.-	7.18			6.4	6.2/5.-	10.1			2030	2270/2050	2350		
	B		8	7	7																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
				8																		
Chemistry Tech prerenewal/postrenewal								RC	MM/MM	MM			RC	MM/MM	MM			RC	MM/MM	MM		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6061

Client EDCC

Sample Description 007

Test started: Date 6/5/16 Time 1430

Test ended: Date 6/7/16 Time 1500

Test Species P. promelas BAL ID# 060916

Technician:	Ohour RC	24hour RC	48hour EGB	72hour /	96hour /
Time:	Ohour 1430	24hour 1840	48hour 1500	72hour /	96hour /
Temperature (°C):	Ohour 24.7	24hour 24.9	48hour 24.9	72hour /	96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
0s	A		8	8	8			7.9	7.7 / 7.7	7.5			7.3	7.4 / 7.6	7.1			174.7	207 / 168.8	194.2		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
32.0	A		8	8	8			8.0	7.7 / 7.5	7.5			7.0	7.2 / 7.0	7.1			848	852 / 819	820		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC / MM	EGB			RC	RC / MM	EGB			RC	RC / MM	EGB		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X16061

Client EDCC

Sample Description 007

Test started: Date 6/5/16 Time 1430

Test ended: Date 6/7/16 Time 1500

Test Species P. promelas ID# BAL060216

Technician:	Ohour RC	24hour RC	48hour EGB	72hour /	96hour /
Time:	Ohour 1430	24hour 1840	48hour 1500	72hour /	96hour /
Temperature (°C):	Ohour 24.7	24hour 24.9	48hour 24.9	72hour	96hour

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
45.0	A		8	8	8			8.0 7.9	7.7 7.9	7.6			6.8 7.3	7.2 6.7	6.9			1077 747	1087 1078	1125		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	7																	
	E		8	8	8																	
50.0	A		8	8	8			8.0 8.0	7.7 7.9	7.6			6.6 7.0	7.2 6.4	6.9			1160 848	1167 1172	1224		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC MW	EGB			RC	RC MW	EGB			RC	RC MW	EGB		

ACUTE2 Rev 1.0

Corrections 0 hr RC 6/5/16

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6061

Client EDCC

Sample Description 007

Test started: Date 6/5/16 Time 1430

Test ended: Date 6/7/16 Time 1500

Test Species P. promelas ID# BAL 060216 RC 6/5/16

Technician:	Ohour RC	24hour RC	48hour EGB	72hour /	96hour /
Time:	Ohour 1430	24hour 1846	48hour 1500	72hour /	96hour /
Temperature (°C):	Ohour 24.7	24hour 24.9	48hour 24.9	72hour /	96hour /

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
C/C		N/A																				
56.0	A		8	8	8			8.0	7.7 / 7.9	7.6			6.3	7.1 / 6.8	6.9			1274	1281 / 1274	1284		
	B		8	8	8																	
	C		8	8	8																	
	D		8	8	8																	
	E		8	8	8																	
													RC 6/6/16 6.9									
75.0	A		8	8	8			8.0	7.7 / 7.9	7.6			5.2	5.3 / 5.3	6.8			1618	1621 / 1622	1709		
	B		8	8	8																	
	C		8	8	8																	
	D		8	7 / 6	6																	
	E		8	8	8																	
Chemistry Tech prerenewal/postrenewal								RC	RC / MM	EGB			RC	RC / MM	EGB			RC	RC / MM	EGB		

ACUTE2 Rev 1.0

BIO-ANALYTICAL LABORATORIES ACUTE TOXICITY TEST SURVIVAL AND WATER QUALITY DATA

Project# X6006l

Client EDCC

Sample Description 007

Test started: Date 6/5/16 Time 1430

Test ended: Date 6/9/16 Time 1500

Test Species P. promelas ID# BAL0602l6

Technician:	Ohour RC	24hour RC	48hour EAB	72hour ___/___	96hour ___/___
Time:	Ohour 1430	24hour 1840	48hour 1500	72hour ___/___	96hour ___/___
Temperature (°C):	Ohour 24.7	24hour 24.9	48hour 24.9	72hour ___/___	96hour ___/___

Test Dilution	Replicate	Test Salinity	# Live Organisms					Dissolved Oxygen					pH					Conductivity				
			0 hr	24	48	72	96	0	24	48	72	96	0	24	48	72	96	0	24	48	72	96
%		N/A																				
100.0	A		8	0	0			8.1	7.6/7.9	→			RC 6/6/16 4.6	5.6 & 4.7	→			2620	2040/2020 →			
	B		8	0	0																	
	C		8	0	0																	
	D		8	0	0																	
	E		8	0	0																	
100.0																						
pH adj	A		8	8	8			8.0	7.6/7.7	7.6			6.4	6.0/5.7	6.6			2030	2090/2050	2180		
	B		8	8	8																	
	C		8	8	8																	
	D		8	7	7																	
	E		8	7	7																	
Chemistry Tech prerenewal/postrenewal								RC	RC/MM	EAB			RC	RC/MM	EAB			RC	RC/MM	EAB		

ACUTE2 Rev 1.0

APPENDIX C
STATISTICAL ANALYSES

Daphnid Acute Test-48 Hr Survival

Start Date:	6/5/2016	Test ID:	X6061DP	Sample ID:	AR0000752/007
End Date:	6/7/2016	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/4/2016	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	DP-Daphnia pulex
Comments:					

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	0.8750	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	0.8750
45	0.8750	0.7500	0.8750	0.7500	0.8750
50	0.8750	0.7500	0.8750	0.7500	0.6250
56	0.7500	0.6250	1.0000	0.8750	0.7500
75	0.7500	0.6250	0.8750	0.7500	0.7500
100	0.1250	0.0000	0.0000	0.0000	0.0000
100.0 PH ADJ	1.0000	0.8750	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root					1-Tailed		
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
D-Control	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5			
32	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5	0.000	2.443	0.1693
*45	0.8250	0.8462	1.1445	1.0472	1.2094	7.764	5	3.056	2.443	0.1693
*50	0.7750	0.7949	1.0850	0.9117	1.2094	11.644	5	3.915	2.443	0.1693
*56	0.8000	0.8205	1.1217	0.9117	1.3931	16.470	5	3.385	2.443	0.1693
*75	0.7500	0.7692	1.0526	0.9117	1.2094	10.024	5	4.383	2.443	0.1693
*100	0.0250	0.0256	0.2144	0.1777	0.3614	38.301	5	16.473	2.443	0.1693
100.0 PH ADJ	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5	0.000	2.443	0.1693

Auxiliary Tests	Statistic	Critical			Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.96315	0.94			0.08849	0.44762
Bartlett's Test indicates equal variances (p = 0.61)	5.39689	18.4753				
Hypothesis Test (1-tail, 0.05)	**MSDu**	**MSDp**	**MSB**	**MSE**	**F-Prob**	**df**
Dunnett's Test indicates significant differences Treatments vs D-Control	0.09489	0.0994	0.70336	0.01201	1.9E-16	7, 32

EQB 10/23/16

Reviewed by:_____

Daphnid Acute Test-48 Hr Survival

Start Date:	6/5/2016	Test ID:	X6061DP	Sample ID:	AR0000752/007
End Date:	6/7/2016	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/4/2016	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	DP-Daphnia pulex
Comments:					

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	0.8750	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	0.8750
45	0.8750	0.7500	0.8750	0.7500	0.8750
50	0.8750	0.7500	0.8750	0.7500	0.6250
56	0.7500	0.6250	1.0000	0.8750	0.7500
75	0.7500	0.6250	0.8750	0.7500	0.7500
100	0.1250	0.0000	0.0000	0.0000	0.0000
100.0 PH ADJ	1.0000	0.8750	1.0000	1.0000	1.0000

			Transform: Arcsin Square Root					Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5	1	40
32	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5	1	40
45	0.8250	0.8462	1.1445	1.0472	1.2094	7.764	5	7	40
50	0.7750	0.7949	1.0850	0.9117	1.2094	11.644	5	9	40
56	0.8000	0.8205	1.1217	0.9117	1.3931	16.470	5	8	40
75	0.7500	0.7692	1.0526	0.9117	1.2094	10.024	5	10	40
100	0.0250	0.0256	0.2144	0.1777	0.3614	38.301	5	39	40
100.0 PH ADJ	0.9750	1.0000	1.3564	1.2094	1.3931	6.055	5		

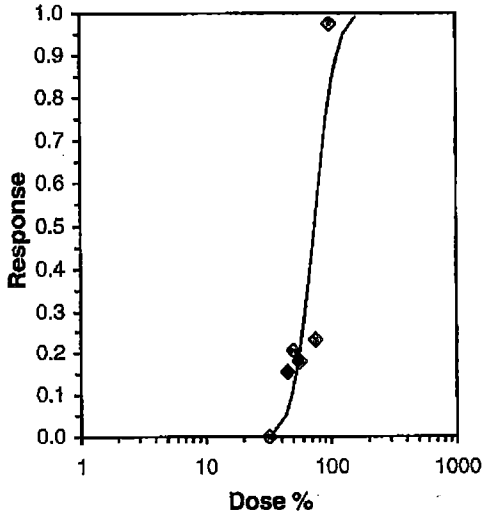
Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.05)	0.96315	0.94	0.08849	0.44762
Bartlett's Test indicates equal variances (p = 0.61)	5.39689	18.4753		

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	6.92179	2.55296	-0.1664	14.0099	0.025	23.6693	9.48773	9.3E-05	1.87097	0.14447	9
Intercept	-7.9504	4.68546	-20.959	5.05851							
TSCR	0.03782	0.05596	-0.1176	0.1932							

Point	Probits	%	95% Fiducial Limits	
EC01	2.674	34.2669		
EC05	3.355	42.9864		
EC10	3.718	48.5085		
EC15	3.964	52.6296		
EC20	4.158	56.1533		
EC25	4.326	59.3637		
EC40	4.747	68.2911		
EC50	5.000	74.296		
EC60	5.253	80.8289		
EC75	5.674	92.9843		
EC80	5.842	98.3004		
EC85	6.036	104.882		
EC90	6.282	113.792		
EC95	6.645	128.41		
EC99	7.326	161.085		

Significant heterogeneity detected (p = 9.30E-05)



EAB 6/23/16

ToxCalc v5.0.23

Reviewed by:_____

Acute Fish Test-48 Hr Survival

Start Date:	6/5/2016	Test ID:	X6061PP	Sample ID:	AR0000752/007
End Date:	6/7/2016	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/4/2016	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas

Comments:

Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000
45	1.0000	1.0000	1.0000	0.8750	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	0.7500	1.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000
100.0 PH ADJ	1.0000	1.0000	1.0000	0.8750	0.8750

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5		
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
45	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	25.00	16.00
50	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
56	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	27.50	16.00
75	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	25.00	16.00
*100	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	15.00	16.00
100.0 PH ADJ	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5	22.50	16.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.67872	0.94	-2.4259	8.39006
Equality of variance cannot be confirmed				
Hypothesis Test (1-tail, 0.05)				
Steel's Many-One Rank Test indicates significant differences				
Treatments vs D-Control				

EbB 6/23/16

Acute Fish Test-48 Hr Survival

Start Date:	6/5/2016	Test ID:	X6061PP	Sample ID:	AR0000752/007
End Date:	6/7/2016	Lab ID:	ADEQ880630	Sample Type:	EFF2-Industrial
Sample Date:	6/4/2016	Protocol:	EPAAW02-EPA/821/R-02-01	Test Species:	PP-Pimephales promelas
Comments:					

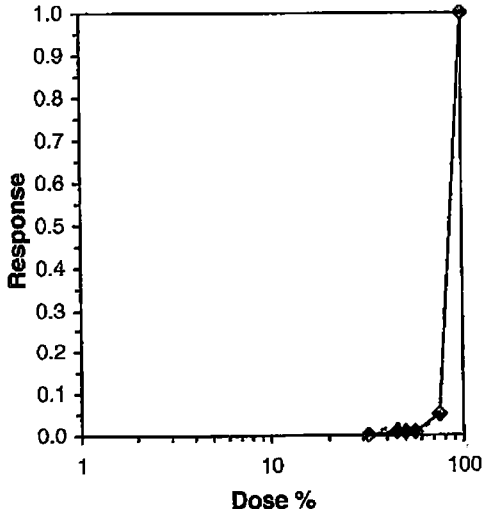
Conc-%	1	2	3	4	5
D-Control	1.0000	1.0000	1.0000	1.0000	1.0000
32	1.0000	1.0000	1.0000	1.0000	1.0000
45	1.0000	1.0000	1.0000	0.8750	1.0000
50	1.0000	1.0000	1.0000	1.0000	1.0000
56	1.0000	1.0000	1.0000	1.0000	1.0000
75	1.0000	1.0000	1.0000	0.7500	1.0000
100	0.0000	0.0000	0.0000	0.0000	0.0000
100.0 PH ADJ	1.0000	1.0000	1.0000	0.8750	0.8750

			Transform: Arcsin Square Root					Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
D-Control	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	0	40
32	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	0	40
45	0.9750	0.9750	1.3564	1.2094	1.3931	6.055	5	1	40
50	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	0	40
56	1.0000	1.0000	1.3931	1.3931	1.3931	0.000	5	0	40
75	0.9500	0.9500	1.3239	1.0472	1.3931	11.684	5	2	40
100	0.0000	0.0000	0.1777	0.1777	0.1777	0.000	5	40	40
100.0 PH ADJ	0.9500	0.9500	1.3196	1.2094	1.3931	7.623	5		

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.05)	0.70649	0.934	-2.2822	7.09227
Equality of variance cannot be confirmed				

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	84.976	83.127	86.867
5.0%	85.949	85.010	86.899
10.0%	85.949	85.010	86.899
20.0%	85.949	85.010	86.899
Auto-0.0%	84.976	83.127	86.867



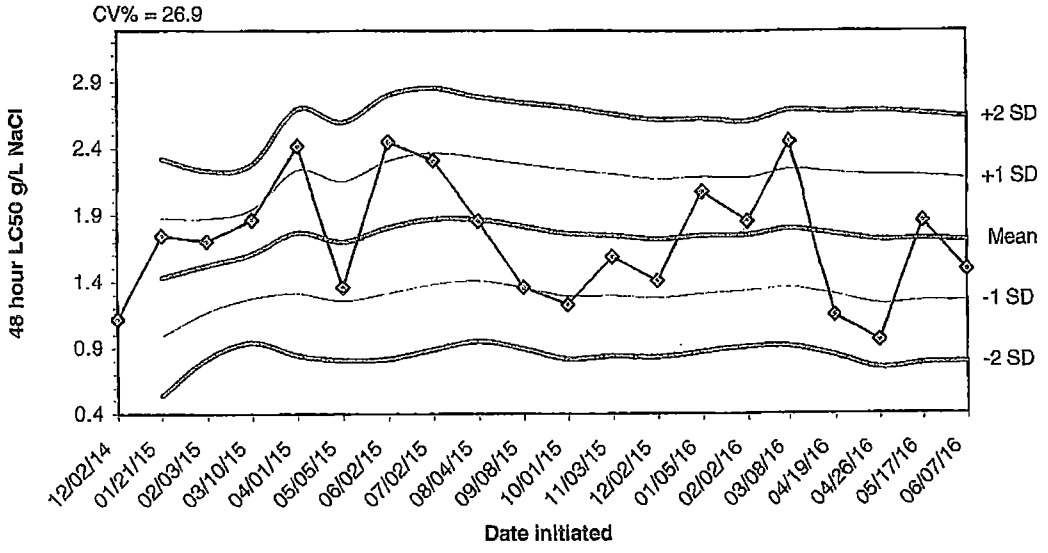
EVB 6/23/16

ToxCalc v5.0.23

Reviewed by:____

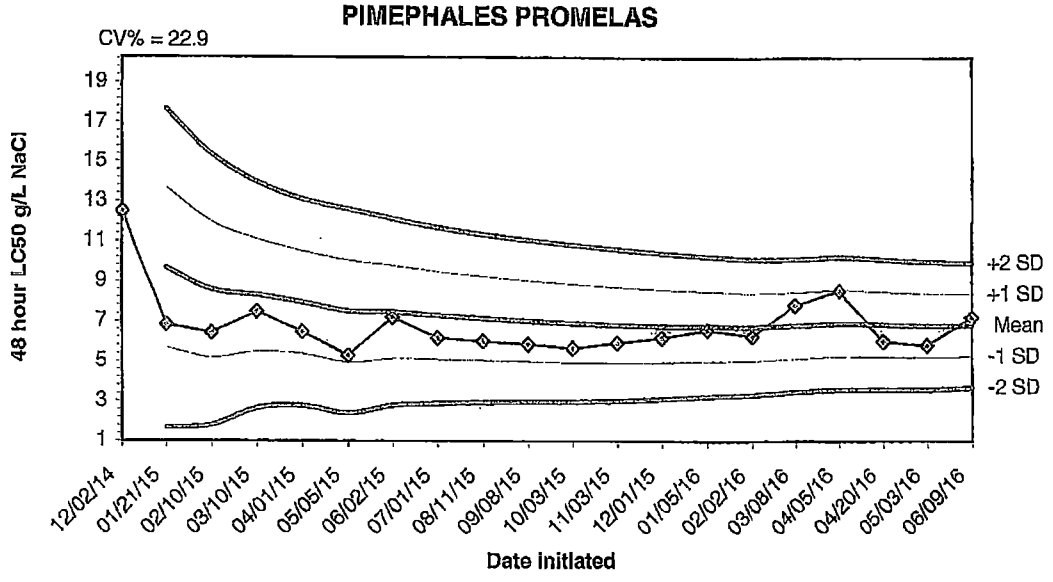
APPENDIX D
QUALITY ASSURANCE CHARTS

2016 ACUTE REFERENCE TOXICANT TEST RESULTS FOR DAPHNIA PULEX



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/02/14	1.1200					
01/21/15	1.7500	1.4350	0.9895	0.5440	1.8805	2.3260
02/03/15	1.7100	1.5267	1.1739	0.8212	1.8794	2.2322
03/10/15	1.8700	1.6125	1.2772	0.9419	1.9478	2.2831
04/01/15	2.4200	1.7740	1.3106	0.8472	2.2374	2.7008
05/05/15	1.3600	1.7050	1.2574	0.8098	2.1526	2.6002
06/02/15	2.4500	1.8114	1.3152	0.8190	2.3077	2.8039
07/02/15	2.3100	1.8738	1.3817	0.8896	2.3658	2.8579
08/04/15	1.8600	1.8722	1.4119	0.9516	2.3325	2.7929
09/08/15	1.3600	1.8210	1.3578	0.8945	2.2842	2.7475
10/01/15	1.2300	1.7673	1.2931	0.8188	2.2415	2.7157
11/03/15	1.5900	1.7525	1.2975	0.8424	2.2075	2.6626
12/02/15	1.4100	1.7262	1.2803	0.8344	2.1721	2.6180
01/05/16	2.0800	1.7514	1.3127	0.8740	2.1901	2.6289
02/02/16	1.8600	1.7587	1.3350	0.9113	2.1824	2.6060
03/08/16	2.4500	1.8019	1.3576	0.9132	2.2462	2.6905
04/19/16	1.1500	1.7635	1.3052	0.8469	2.2219	2.6802
04/26/16	0.9600	1.7189	1.2356	0.7523	2.2022	2.6855
05/17/16	1.8600	1.7263	1.2555	0.7847	2.1971	2.6679
06/07/16	1.4900	1.7145	1.2532	0.7919	2.1758	2.6371

2016 48-HOUR ACUTE REFERENCE TOXICANT TEST RESULTS FOR PIMEPHALES PROMELAS



Dates	Values	Mean	-1 SD	-2 SD	+1 SD	+2 SD
12/02/14	12.5000					
01/21/15	6.8500	9.6750	5.6798	1.6847	13.6702	17.6653
02/10/15	6.4200	8.5900	5.1970	1.8040	11.9830	15.3760
03/10/15	7.4800	8.3125	5.4871	2.6617	11.1379	13.9633
04/01/15	6.4800	7.9460	5.3655	2.7851	10.5265	13.1069
05/05/15	5.2900	7.5033	4.9533	2.4032	10.0534	12.6034
06/02/15	7.2000	7.4600	5.1293	2.7986	9.7907	12.1214
07/01/15	6.1800	7.3000	5.0953	2.8905	9.5047	11.7095
08/11/15	6.0000	7.1556	5.0482	2.9408	9.2629	11.3703
09/08/15	5.8600	7.0260	4.9973	2.9687	9.0547	11.0833
10/03/15	5.6700	6.9027	4.9352	2.9677	8.8702	10.8377
11/03/15	5.9200	6.8208	4.9236	3.0263	8.7181	10.6154
12/01/15	6.1800	6.7715	4.9464	3.1212	8.5967	10.4219
01/05/16	6.5900	6.7586	5.0043	3.2501	8.5128	10.2670
02/02/16	6.2700	6.7260	5.0309	3.3357	8.4211	10.1163
03/08/16	7.8200	6.7944	5.1340	3.4737	8.4547	10.1150
04/05/16	8.5300	6.8965	5.2347	3.5729	8.5583	10.2201
04/20/16	6.0100	6.8472	5.2216	3.5959	8.4729	10.0986
05/03/16	5.8100	6.7926	5.1949	3.5973	8.3903	9.9880
06/09/16	7.2000	6.8130	5.2553	3.6975	8.3707	9.9285

APPENDIX E
AGENCY FORMS

Acute Forms
Daphnia pulex Survival

Permittee: El Dorado Chemical - Outfall 007
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 6/03/16** **To: 6/04/16**
From: **To:**
Test Initiated: 6/05/16
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	32.0	45.0	50.0	56.0	75.0	100.0	100.0 pH
24-hour	A	100.0	100.0	87.5	100.0	100.0	75.0	25.0	100.0
	B	100.0	100.0	100.0	100.0	62.5	75.0	12.5	87.5
	C	87.5	100.0	87.5	100.0	100.0	87.5	75.0	100.0
	D	100.0	100.0	100.0	75.0	100.0	75.0	62.5	100.0
	E	100.0	100.0	100.0	75.0	75.0	87.5	0.0	100.0
48-hour	A	100.0	100.0	87.5	87.5	75.0	75.0	12.5	100.0
	B	100.0	100.0	75.0	75.0	62.5	62.5	0.0	87.5
	C	87.5	100.0	87.5	87.5	100.0	87.5	0.0	100.0
	D	100.0	100.0	75.0	75.0	87.5	75.0	0.0	100.0
	E	100.0	87.5	87.5	62.5	75.0	75.0	0.0	100.0
	Mean	97.5	97.5	82.5	77.5	80.0	75.0	2.5	97.5

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100.0%) **X YES** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = 74.30% effluent
95 % confidence limits: N/A
Method of LC_{50} calculation: Probit
3. If you answered NO to 1.a) enter (P) otherwise enter (F) F
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): F
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Daphnia pulex 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 007
NPDES Number: AR0000752/ AFIN 70-00040
Contact: Eddie Pearson
Analyst: Callahan, Merritt

Sample Collected	**From:**	**Date 6/03/16**	**Time 1615**
	To:	**Date 6/04/16**	**Time 1615**
Test Begin		**Date 6/05/16**	**Time 1250**
Test End		**Date 6/06/16**	**Time 1230**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	7.9	7.7	7.5	24.7	25.0	25.0	31.4			52.0			7.3	7.6	7.5
32.0	8.0	7.5	7.5	24.7	25.0	25.0							7.3	7.6	7.5
45.0	8.0	7.9	7.4	24.7	25.0	25.0							6.8	6.7	7.3
50.0	8.0	7.9	7.5	24.7	25.0	25.0							6.6	6.4	7.3
56.0	8.0	7.0	7.3	24.7	25.0	25.0							6.3	6.0	7.2
75.0	8.0	7.9	7.5	24.7	25.0	25.0							5.2	5.3	7.0
100.0	8.1	7.9	7.2	24.7	25.0	25.0	24.0			148.0			4.6	4.7	5.6
100.0 pH	8.0	7.7	7.6	24.7	25.0	25.0							6.4	5.7	6.1

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

Acute Forms
Pimephales promelas Survival

Permittee: El Dorado Chemical - Outfall 007
NPDES Permit Number: AR0000752/ AFIN 70-00040
Composite Collected **From: 6/03/16** **To: 6/04/16**
From: **To:**
Test Initiated: 6/05/16
Dilution Water Used: **Receiving Water** **X Reconstituted Water**

Dilution Series Results - Percent Survival

TIME OF READING	REP	0	32.0	45.0	50.0	56.0	75.0	100.0	100.0 pH
24-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0
	D	100.0	100.0	100.0	100.0	100.0	75.0	0.0	87.5
	E	100.0	100.0	100.0	100.0	100.0	100.0	0.0	87.5
48-hour	A	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0
	B	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0
	C	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0
	D	100.0	100.0	87.5	100.0	100.0	75.0	0.0	87.5
	E	100.0	100.0	100.0	100.0	100.0	100.0	0.0	87.5
	Mean	100.0	100.0	97.5	100.0	100.0	95.0	0.0	95.0

1. Dunnett's Procedure or Steel's Many-One Rank Test as appropriate: Is the mean survival at 48 hours significantly different (p=.05) than the control survival for the % effluent corresponding to:
a.) LOW FLOW OR CRITICAL DILUTION (100.0%) **X YES** **NO**
b.)½ LOW FLOW OR 2X CRITICAL DILUTION (N/A%) **YES** **NO**
2. Enter percent effluent corresponding to the LC_{50} below:
LC_{50} = 84.98% effluent
95 % confidence limits: 83.13 - 86.87%
Method of LC_{50} calculation: Spearman Karber
3. If you answered NO to 1.a) enter (P) otherwise enter (F) F
4. Enter response to item 3 on DMR Form, parameter TEM3D
5. If you answered NO to 1.b) enter (P) otherwise enter (F): F
6. Enter response to item 5 on DMR Form, parameter TFM3D

Biomonitoring
Pimephales promelas 48 hour Acute Static Renewal
Chemical Parameters Chart*

Permittee: El Dorado Chemical - Outfall 007
NPDES Number: AR0000752/ AFIN 70-00040
Contact: Eddie Pearson
Analyst: Callahan, Briggs
Sample Collected **From:** **Date 6/03/16** **Time 1615**
To: **Date 6/04/16** **Time 1615**
Test Begin **Date 6/05/16** **Time 1430**
Test End **Date 6/06/16** **Time 1500**

Parameter	D.O.			Temperature			Alkalinity			Hardness			pH		
Dilut./Time	0hrs.	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs	0hrs	24hrs	48hrs
0	7.9	7.7	7.5	24.7	24.9	24.9	31.4			52.0			7.3	7.6	7.1
32.0	8.0	7.5	7.5	24.7	24.9	24.9							7.3	7.0	7.1
45.0	8.0	7.9	7.6	24.7	24.9	24.9							6.8	6.7	6.9
50.0	8.0	7.9	7.6	24.7	24.9	24.9							6.6	6.4	6.9
56.0	8.0	7.0	7.6	24.7	24.9	24.9							6.3	6.0	6.9
75.0	8.0	7.9	7.6	24.7	24.9	24.9							5.2	5.3	6.8
100.0	8.1	7.9	----	24.7	24.9	-----	24.0			148.0			4.6	4.7	-----
100.0 pH	8.0	7.7	7.6	24.7	24.9	24.9							6.4	5.7	6.6

*This Form is to be submitted with each DMR.
Alkalinity and hardness to be reported as mg/l $CaCO_3$

APPENDIX F
REPORT QUALITY ASSURANCE FORM

Bio-Analytical Laboratories

3240 Spurgin Road
Post Office Box 527
Doyline, LA 71023

(318) 745-2772
1-800-269-1246
Fax: (318) 745-2773

REPORT QUALITY ASSURANCE FORM

Client: El Dorado Chemical /007

Project#: X6061

Chain of Custody Documents Checked by: RC 6/27/16
Technician/Date

Raw Data Documents Checked by: RC 6/27/16
Technician/Date

Statistical Analysis Package Checked by: EGB 6/23/16
Quality Manager/Date

Quality Control Data Checked by: EGB 6/23/16
Quality Manager/Date

Report Checked by: EGB 7/14/16
Quality Manager/Date

I certify that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. The information contained in this document, to the best of my knowledge, is true, accurate and complete.

Erin G. Boggs BS — 7/14/16

Quality Manager **Date**

Report Rev. 3.0

ORIGIN ID:ELDA (870) 863-1400
EDDIE PEARSON
ELDORADO CHEMICAL COMPANY
4500 NORTH WEST AVE

ELDORADO, AR 71730
UNITED STATES US

SHIP DATE: 20JUL16
ACTWGT: 5.00 LB
CAD: 5887030/INET3790

BILL SENDER

TO **WATER ENFORCEMENT BRANCH**
ADEQ
5301 NORTHSHORE DR

NORTH LITTLE ROCK AR 72118
(870) 863-1484 REF:
INV:
PO: DEPT:

544J15CBD/14E8

FedEx Express

THU - 21 JUL 10:30A
PRIORITY OVERNIGHT

TRK# 0201 **7767 9884 9222**

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LIT
AR-US

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